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ABSTRACT

This project was conducted to: (1) identify and clarify the primary needs and issues related to highway safety manpower education and training, (2) evaluate the potential sources of assistance for resolving the needs and issues, and (3) evolve strategies for bringing about a significant improvement in the quality and quantity of highway safety manpower. Relevant literature was examined for ideas related to project objectives, and data were gathered through personal interviews with appropriate representatives of various organizations concerned with manpower development in highway safety. A major source of data came from planning, conducting, and follow-up activities related to a manpower development symposium, and texts of the major speeches from the symposium are included in this report. Project findings are reported concerning: (1) the organizational structure of highway safety management, (2) current status of manpower development, (3) the private sector and (4) education and training. The report concludes that before any major improvement occurs, closer coordination and cooperation is needed within and among the levels of government, and between governmental and non-governmental groups. (SB)

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MANPOWER DEVELOPMENT IN HIGHWAY SAFETY

NEEDS, ISSUES AND ALTERNATIVES FOR ACTION

Prepared For The
Highway Users Federation
For
Safety and Mobility

by

R. W. BISHOP AND ASSOCIATES
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Prepared For The Highway Users Federation
For Safety And Mobility
Contract No. A70G3

By

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The opinions, findings, observations, and recommendations expressed in this work are those of the authors and do not necessarily reflect those of the Highway Users Federation For Safety and Mobility or any other individual, group, or organization.

ABSTRACT

Recent studies show that manpower development has not kept pace with highway safety programming. The lack of realistic guidelines for assessing education and training needs, failure to involve educational institutions in planning, shortage of funds, and inadequate coordination have handicapped efforts to implement the Highway Safety Act. Manpower development is not an end, but rather an essential *means* to implementing and optimizing the effectiveness of driver education, emergency medical service, driver testing and licensing, enforcement and other program elements.

Many recommendations regarding manpower development in highway safety are presented in this and other projects. The key questions appear to be:

1.) Who should take the initiative nationally and in each State to extract the most realistic and promising measures, place them in a priority order, and develop a comprehensive plan and system for implementation?
2.) What kind of organizational structure, at all government levels, will keep action in manpower development closely attuned to the needs of the functional highway safety programs?
3.) What action is needed to stimulate and coordinate appropriate support (including funding) for manpower development from government and private agencies?

This project, by presenting the findings and conclusions of the staff along with speeches delivered at the Atlanta Symposium, addressed these and related questions. However, complex questions do not have simple answers. Perhaps some ideas included within this report will stimulate thought and action leading to improved manpower development in highway safety.

The report concludes that before any major improvement occurs, closer coordination and cooperation is needed within and among the levels of government (Federal-State-local), and between governmental and non-governmental groups. Individuals and groups are more likely to cooperate in implementing plans when they help to

develop the plan. Besides, no one group has a corner on all the good ideas for helping to solve a problem. The National Highway Traffic Safety Administration Manpower Development Division can exert a major influence in bringing about coordination and cooperation in manpower development efforts as a means to producing higher level performance by those engaged in highway safety occupations.

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Early in the project, an Ad Hoc Advisory Committee met to review the project purpose and design and to offer direction to the project staff. This group included Dr. Aaron Adams, Robert Freeman, Ben Jordan, Dr. Les Moore, James Stinchcomb, and the Project Manager—Dr. Jack K. Weaver.

Prior to the formal Symposium, held in Atlanta, Georgia on April 27–28, 1971, the following individuals met with the project staff to formulate plans for the direction of the Symposium: Dr. James Carnahan, Gordon Sheehe, Dr. William Tarrants, and Dr. Jack K. Weaver.

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INTRODUCTION

The purpose of the highway transportation system is to move people and goods to desired locations safely, efficiently, rapidly and economically. Achievement of this purpose requires many managerial and support agencies operating at the local, State and Federal level. Since these agencies depend upon qualified and trained personnel, manpower development becomes an important *means* to a more efficient and effective system.

Manpower studies supported by the National Highway Traffic Safety Administration have attempted to identify the quantity and quality of manpower needed to implement the Highway Safety Act of 1966, and to suggest ways of meeting the needs. The major studies are reviewed here and listed in the "Bibliography."

1.) A 1968 study (*1*) conducted by Booz, Allen and Hamilton, Inc. identifies the various safety specialist manpower requirements in all 50 States and projects needs on a year-by-year basis. It consists of a comprehensive inventory of existing state highway safety positions and those projected for the future. To provide a comparative basis, all position titles were translated into 36 composite occupations based on similar training requirements.

2.) A second study of highway safety manpower needs was conducted in 1970 by the National Association of Counties Research Foundation. (2) This study, through a series of nine guides on the various administrative areas, complements the one by Booze, Allen and Hamilton, Inc. in identifying safety manpower requirements at the local (cities and counties) level and projecting these needs for ten years.

3.) A study completed in 1969 by the Stanford Research Institute is titled *The Feasibility of Establishing Highway Safety Manpower Development And Research Centers At University-Level Institutions* (3). This study identifies the pros and cons of four alternatives for manpower development and research centers: (a) National Center, (b) Regional Centers, (c) Regional Consortia and (d) State Centers.

4.) The most recent study in this area, completed in August, 1971 by the Center for Vocational and Technical Education of Ohio State University (4) is concerned with the role of vocational-technical schools in highway safety manpower. As a majority of the jobs in highway safety are at the skilled or technical level, this study is a vital complement to the previous manpower studies.

Although not one of the National Highway Traffic Safety Administration Studies, the *Report On Highway Safety Manpower And Training* by the Traffic Education and Training Committee of the National Safety Council (5) is a major effort containing a detailed analysis of the problem and a recommended plan of action. The original "Blue Book" published in 1968 has been recently revised.

PROJECT PURPOSE AND PROCEDURES

This project evolved from a need to examine the studies and other activities related to highway safety manpower development to see where we are, where we need to go, and how we can get there. Specifically, the project purposes were:

1.) to identify and clarify the primary needs and issues related to highway safety manpower education and training;
2.) to evaluate the potential sources of assistance for resolving the needs and issues; and
3.) to evolve strategies for bringing about a significant improvement in the quality and quantity of highway safety manpower.

Procedures for accomplishing the stated purposes follow.

Literature Review—Relevant research reports, studies, articles and speeches were examined for ideas related to project objectives (see "Bibliography").

Interviews—Personal interviews were conducted by the Project Staff with appropriate representatives of various organizations concerned with manpower development in highway safety (see Appendix A). The purpose of these interviews was to solicit their views on education and training needs, issues and resources.

Symposium—A major source of ideas for the project report came from planning, conducting and follow-up activities related to a Symposium held in Atlanta, Georgia, April 27-28, 1971. Formal speeches and small group discussions contributed significantly to all three project purposes. The formal speeches are on pages 23 to 68, and the "Symposium Program" and a list of "Participants" are found as Appendix items B and C.

In advance of the Symposium a questionnaire was mailed to each participant to elicit his perspective of critical issues and problems. Upon return the responses were examined and synthesized and a composite list of issues prepared. (Appendix D) These were mailed to the Symposium participants.

In addition to these major activities the Project Staff benefitted from other formal and informal activities. An Ad Hoc Advisory Committee was formed early in the Project, and they met on May 31–June 1, 1970 to review the Project design and purpose. Staff member, Kent Johansen, maintained close contact with the National Safety Council's Traffic Education and Training Committee. The Project Director worked closely with the Highway Safety Career Opportunities Project sponsored by the Highway Users Federation for Safety and Mobility. Staff members attended numerous meetings related to manpower development at the National Safety Congress, the Midwestern Seminar on Teacher Preparation in Traffic Safety Education in Milwaukee (Nov., 1970), and other meetings. Ideas gleaned from these experiences are included in the report that follows.

FINDINGS AND CONCLUSIONS

Since 1900, highway transportation in the United States has changed from an experimental mode of travel to a vast and complex system established for the purpose of moving people and goods rapidly, economically, and safely. In regard to achievement, automotive transportation has had a positive impact on the society. Throughout the system's rather short period of development, the manufacture and use of motor vehicles has involved a substantial percentage of the nation's population, with accompanying contributions to personal income and the overall economy. The rapid delivery of agricultural and industrial products has aided the United States in gaining worldwide recognition as a leading economic power. The fact that U.S. citizens enjoy the highest standard of living on earth is attributable in large measure to expansion and improvement of highway transportation. In sum, the nation and its people have prospered immeasurably as a result of increased mobility made possible by motor vehicles and highways.

Systems, like people, are neither all good nor all bad. The highway transportation system is no exception. Millions of man-vehicle combinations operating on millions of miles of roadway produce negative results in the form of noise, air pollution and collisions. The collision criteria, although only one measure for judging system efficiency, has become such a serious problem that a sub-system called "highway safety management" has been established to deal with it.

This project relates to manpower development in highway safety management. Major functional areas comprising this sub-system include motor vehicle administration, traffic engineering, education, enforcement and emergency medical care. Although these functions come under highway safety, they help to move people and goods rapidly and economically, as well as safely. Safety is difficult to isolate because it is so closely interwoven with other system components. Therefore, although this report consistently refers to highway safety manpower, that segment of manpower not only influences the incidence and severity of highway collisions, but also plays a major role in total management of the highway transportation system.

ORGANIZATIONAL STRUCTURE

Many facets of highway safety management at the state and local levels are interwoven into existing governmental structures. Although this reality has some advantages, it creates difficulty when an attempt is made to coordinate the various segments concerned with highway safety. Judicial decisions are often handed down without sufficient attention to the effect on total system operation. Laws for highway user control are enacted by legislatures without due consideration to eventual outcomes on other components of the system. Police traffic supervisors and traffic engineers fail to work closely on matters of mutual concern. Driver education teachers and driver licensing officials do not communicate with each other. Although there are many exceptions to the conditions mentioned, and the exceptions appear to be increasing, too many examples still exist. Therefore, a need exists for coordination at the state and local levels to tie system components together for operation as a cohesive whole.

A major function of those responsible for coordination would be to make a continuous assessment of manpower needs and to develop plans for meeting those needs. Success in highway safety management, like in any other management situation, requires the availability of qualified personnel at all levels of operation. Whether these persons are technicians, professionals or administrators, they should understand how their special tasks contribute to the success of the system. In fact, lack of coordination, past and present, may be partially due to a lack of awareness among highway safety personnel of the potential, as well as the limitations, of other segments of highway safety programs.

CURRENT STATUS OF MANPOWER DEVELOPMENT

In regard to highway safety manpower, what means have been used to develop qualified personnel? In general, primary responsibility for recruiting, selecting, and training personnel has been assumed by state and local governmental agencies. These programs (short preservice preparation and periodic refresher training) have tended to concentrate at the recruit and operations level with insufficient attention given to the instruction of supervisors and administrators. Exceptions, of course, include certain levels within the broad fields of highway and traffic engineering and driver education teacher preparation. In these and a few other instances, colleges and universities have exhibited a limited interest, but not in proportion to recognized needs.

Recent studies supported by the National Highway Traffic Safety Administration (NHTSA) have shed some light on current and future manpower needs. In 1968, a report prepared by Booz, Allen and Hamilton, Inc. estimated the various highway safety manpower requirements at the *State* level. (Including driver education, which they classified as a State-level position). The report indicated that in 1968 the States already were 143,000 short of the number of safety specialists required to fully implement the NHTSA standards, and that an additional 17,000 persons were needed before 1970 at the State level alone. Between August, 1969, and June, 1970, the National Association of Counties Research Foundation conducted a nationwide survey of highway safety manpower needs of *local* governments. The Foundation estimated that slightly over one million full-time or equivalent personnel were engaged in traffic safety activities at the local level, and that more than half a million would be needed by 1978. A third study, completed in 1969 by the Stanford Research Institute, compared the pros and cons of four plans for manpower development and research centers. This report used the thirty-six generalized job titles identified by Booz, Allen and Hamilton, Inc., and specified needs in both entry and refresher training. The most recent study, conducted by the Center for Vocational and Technical Education of Ohio State University, focused on the role of vocational-technical schools in highway safety manpower. The results of these four studies support the general conclusion of a report by the Traffic Education and Training Committee of the National Safety Council that highway safety manpower development should be of major concern.

ACTUAL AND POTENTIAL IMPACT OF FEDERAL LEGISLATION

Prior to 1966, Federal highway transportation legislation, in general, had not reflected the need for a coordinated, nationwide, and continuous traffic safety program. Not only did the 89th Congress of the United States inact PL 89–564 (Highway Safety Act), but passed legislation dealing with vehicular standards and controls as well. In addition, a Department of Transportation was formed which enabled highway safety programs to receive support and coordination from the Federal level.

These and related enactments by subsequent sessions of Congress provided a real opportunity for highway safety program improvement.

Of primary importance in this report is the Highway Safety Act which requires each State to place into effect a comprehensive highway safety program that is approved by the Department of Transportation. Standards and guidelines produced through the facilities of the Department's National Highway Traffic Safety Administration provide States and their political subdivisions with a framework for program improvement. These Standards also provide identifiable areas of need in regard to highway safety specialists at all management and operational levels. The Highway Safety Act and related legislation instigated the several formal explorations of highway safety manpower needs described earlier, and this legislation should encourage further investigation. Unfortunately, while the potential impact of the Highway Safety Act in regard to highway safety manpower development is unlimited, congressional appropriations have been inadequate.

Realizing present limitations for supporting manpower development, the NHTSA has identified five priority tasks for emphasis. They are:

1.) recommending national manpower policies and priorities;
2.) developing plans for meeting the nation's manpower requirements;
3.) developing training resources and materials;
4.) conducting or sponsoring training programs; and
5.) evaluating program effectiveness.

The rationale for the Administration's plan is found in Dr. Charles Hartman's speech before the Atlanta Symposium which is included in this report.

Funds available from the NHTSA under Section 402 of the Act provide a source of financial assistance for education and training. Here the training is in support of an operational State safety program. Certain restrictions on the use of Section 402 funds for training have resulted in its use almost exclusively for in-service training. Generally, the trainees consist of persons who are employed at some level of State and local government. At present, other Federal sources are being sought for assistance in pre-service training of highway safety personnel.

The Manpower Development Division of the NHTSA prepared a report recently on "Federal Programs for Education and Related Activities" which describes the Federal Assistance Programs. The report reveals that almost $14 billion in Federal funds were appropriated in 1971 for education and related activities to institutions of higher edu-

cation, vocational-technical education, and elementary-secondary education. The Office of Education, Department of Labor, Veterans Administration, Department of Agriculture, Department of Defense and the Office of Economic Opportunity were major funding sources. Grants requested and administered by State and local agencies were provided for operating costs, research, fellowships and scholarships. The report adds:

> While numerous special purpose programs may represent only an indirect resource for safety manpower development and training, others, representing the bulk of Federal funds, permit State and local discretion of disciplines and occupational areas for manpower development and training. (6)

State and local officials concerned with highway safety manpower development should utilize the potential of these Federal Assistance Programs, particularly since NHTSA manpower funds are so limited. These officials would be assisted by an information exchange center among the various Federal agencies on possible sources of funding for highway safety manpower. Appropriate information conveyed to concerned State officials would facilitate progress.

Under the Federal Aid Highway Act of 1970, the Secretary of Transportation is authorized and directed to establish in the Federal Highway Administration an Institute for developing and administering training programs of instruction for employees engaged in Federal-aid highway work. Up to half of one percent of all funds apportioned for any fiscal year to any State shall be available for expenditure by State highway departments in connection with education and training of State and local highway department employees. This Act provides a substantial source of assistance for developing and improving the competency of workers involved in implementing the Highway Safety Program Standards which are under the jurisdiction of the Federal Highway Administration. There is no corresponding source of assistance for implementing the other Program Standards promulgated by NHTSA.

THE PRIVATE SECTOR

Prior to 1966, business and industrial agencies provided a considerable amount of financial support for highway safety manpower development. Apparently, expecting the Federal Government to take over and expand highway safety manpower development as an ad-

junct to implementation of the Highway Safety Act, the private-sector began a gradual withdrawal of support. With extremely limited support by the Federal Government and waning activity on the part of private, business and industrial interests, only a negligible amount of money is presently being made available, especially for preparation of management personnel. Realizing this, The Report of the President's Task Force on Highway Safety suggested that:

> The Federal Government should encourage private-sector organizations to engage in innovation, research, development and the provision of training and similar services, and should enlist the cooperation and service of private organizations in the program to attain national goals for improved highway safety. (7)

On March 23, 1971, Douglas W. Toms, Administrator of the NHTSA, wrote to 35 non-government organizations encouraging them to renew their support for education and training in highway safety occupations (See Appendix E for the Administrator's letter.) Mr. Toms' letter, emphasized that: "Unless ways are found to increase education and training opportunities (including financial support) in the field of highway traffic safety, we all will face a deteriorating supply of technical, professional and research personnel in the very near future." At the time this report was prepared, the impact of Mr. Toms' letter was difficult to assess.

ASSESSMENT OF NEEDS

For the most part, current knowledge about highway safety manpower needs has been derived from studies that were nationwide in scope.* Of course, the investigators sampled and projected State and local needs and resources to arrive at national estimates. However, both the magnitude and complexity of the task, coupled with limited time and financial resources, greatly limited the production of information which can be used effectively for planning at the State and local levels. A need exists for development of instruments and guidelines designed to help State and local governments assess their manpower development needs. The initial form of the instruments should be field tested in a few states and then refined for widespread usage. Results

* An exception is a depth analysis of highway safety education and training needs in Michigan conducted by the Highway Traffic Safety Center at Michigan State University.

obtained from this assessment process would enable States to develop realistic action plans.

Past experience suggests that State and/or local analysis of highway safety manpower needs should:

1.) Obtain realistic and accurate information on current and future employment opportunities.
2.) Utilize detailed job descriptions and task analysis as a basis for determining the type and extent of education or training desired.
3.) Describe entry level training content as well as in-service refresher course content for each position level.
4.) Identify present status of education and training and explain why inadequacies exist.

Education and training programs should be geared to the needs of State and local agencies. Therefore, those who assess training needs within a State should work closely with the agencies responsible for particular highway safety programs. Furthermore, a close working relationship between educational institutions and official agencies is imperative.

Assessment of education and training is not a "one-shot" task. The initial survey should be up-dated periodically because of new positions, changes in job requirements, changes in training methods and for other obvious reasons. Long-range planning should be built into the employment-training procedure, but that planning should be sufficiently flexible to meet unforeseen changes in the highway transportation system.

These factors suggest the need for leadership at State and local levels to help match education and training needs with resources. Whoever assumes this role can utilize consultation services provided by the NHTSA, colleges and universities, vocational-technical agencies and private educational consultants. Each State and local subdivision will have to determine the most efficient and effective organizational structure for stimulating and coordinating highway safety education and training. But in any case, a constant force, closely integrated with total highway safety management, is needed.

EDUCATION AND TRAINING

Experience has demonstrated that financial resources alone do not insure quality education and training. Here are some guidelines for

producing an efficient and effective instructional system, discussed under three headings: (1) Development; (2) Implementing; and (3) Evaluating.

Development

The *process* for developing an instructional system or package is generally agreed upon. A brief outline follows:

1.) Describe and analyze the tasks that the learner will be required to perform "on the job."
2.) Based on the results of Step 1, write measureable objectives in terms of behavior that the learner will demonstrate at the end of the training period.
3.) Identify and sequence the supporting knowledge and skills that the learner will need in order to accomplish the behavioral objectives.
4.) Describe learning activities and media suitable for developing the desired learning outcomes.
5.) Prepare test situations to measure the degree to which the behavioral objectives have been reached. The desired proficiency level should be specified in the objectives (Step 2). Results from this evaluative step can supply worthwhile clues for improving the preceding steps.

Before applying an instructional package to learners, an effort should be made to determine their entry level capabilities. Too often this step is overlooked or inadequately carried out. As a result, time and effort are wasted in teaching behaviors that students can already demonstrate. High school or college transcripts of courses completed and number of semester hours tend to be poor indicators of pre-entry knowledge and ability in highway safety occupations. Additionally, many of the standardized pre-employment tests are not related to job performance. Pretests, like the posttests, should be derived from the objectives of the training program.

Carefully developed instructional packages alone do not guarantee desired results; therefore, hiring and preparation of qualified instructors is one of the most important elements in an instructional system. For this reason, a pool of instructional personnel should be organized. There are at least two different sources of potential instructors: (1) those who have some experience in use of instructional methods, but have little background in specific traffic safety content, and (2) those who are experienced in content but lack experience in teaching and

use of instructional methods. In any case, an instructor training component should be built into the intitial plans for an education and training program. Otherwise, the investment made in developing a high quality course of study may be wasted.

Implementing

Success in implementing a specific education and training program, particularly the inservice type, depends upon the value that highway safety administrators place on education of personnel. Training costs money and time; therefore, administrators must be convinced that increased efficiency and/or decreased cost will be a result of the educational efforts. When administrators are thus convinced, they are more likely to budget for meaningful incentives (release time, salary increase, promotions) that will encourage workers to take advantage of improvement opportunities. Administrators hold the key which allows workers to enroll in training programs. Moreover, they influence how much new learning is applied when the trainee returns to his job. These realities point to the need to inform administrators of the value of training for employees.

What are the major problems in the training of new workers for highway safety jobs? Before a prospect enrolls in pre-employment education and training, he must be convinced that positions are open which provide satisfactory financial remuneration. The Stanford Research Institute (3) found that funds for fellowships, scholarships and assistantships are the principal motivational factors for participation in highway safety programs. However, despite the importance of scholarships and salary, the recruiting and retaining of people also depend upon other conditions. The satisfaction of an employee with a job depends upon the degree to which he sees his task as appropriate and challenging. This is a reason employers often refuse to hire people who are considered overqualified. Although people differ in the relative values they place upon their needs, workers at any level must feel that they are doing something worthwhile and that their efforts will be recognized and appreciated. If highway safety agencies are to compete successfully in the employment market, the financial, social and emotional needs of people must be considered.

Prospective highway safety employees must be acquainted with career opportunities in the field. This orientation can take place in occupational counseling programs. A filmstrip and taped audio-presentation on occupations in highway safety, accompanied by a

manual for high school counselors, has been developed by the Highway Users Federation for Safety and Mobility under contract with the NHTSA.

Evaluating

How can the effectiveness of education and training in highway safety be evaluated? Evaluation of an instructional system has been cited as an integral part of the instructional cycle. If the entry and terminal behaviors of the learner are carefully compared, the effectiveness of a training program can be determined.

Evaluating the *relevancy* of instructional objectives established for the training program is another matter. This requires an evaluation of the trainee's actual performance on the job, both before and after instruction. If task performance has not improved after instruction, yet the training program, per se, has demonstrated effectiveness, the training objectives are suspect. In such cases, the training objectives should be examined to assure that they correlate closely with the operational tasks from which they have been derived.

It is impossible, or at least extremely difficult, to evaluate the effectiveness of most highway safety manpower education and training programs by using the number of highway collisions as the sole criteria. Training is only one step in the chain of events that ultimately results in a lower incidence of collisions. Consider the problems of relating instructional programs for breathalyzer operators, driver license examiners, traffic engineers and police administrators to collision records. Those concerned with evaluation should always examine the feasibility of relating the effectiveness of a training program to a reduction in collisions and injuries, but in many cases they will have to rely on evaluation measures previously discussed, i.e. ability to demonstrate achievement of performance objectives.

It is important to note the difference between the "effectiveness" and "efficiency" of a training program. While a program may be effective if it fulfills the requirements suggested by a task analysis, it may not be efficient in terms of cost-benefit. An alternative program may be equally effective and require less time, effort, and cost. Training efficiency in highway safety manpower development, or any other area, is valid to the degree that it meets both effectiveness and efficiency standards. Because funds are and will be limited, the administrators of highway safety manpower development programs cannot afford inefficiency.

ROLE OF EDUCATIONAL INSTITUTIONS

All States have public and private colleges and universities with resources to help plan and implement degree programs, credit courses, short courses, and conferences. Some States are fortunate to have a university with a highway traffic safety center deeply involved in education and training programs for highway safety personnel. Almost every university has a continuing education division set up to help plan and implement needed educational programs. Further, college and university faculty members are available as guest lecturers in workshops, courses, and conferences for highway safety workers. Psychology, sociology, and business management are but a few of the disciplines that can contribute insights to manpower development in highway safety. For more details on the role of higher education in highway safety manpower development, see References (3) (5) (9).

The rapid development of the community college can facilitate education and training in highway safety. Many of these colleges are involved in law enforcement programs (10). The American Association of Junior Colleges is striving to stimulate programs in traffic engineering, motor vehicle administration, police traffic services, driver and traffic safety education, and whatever other programs are needed. Junior colleges and community colleges are particularly valuable because of their accessibility to students and their adaptability to local needs. They should be deeply involved in the education and training of highway safety personnel.

Vocational-technical schools are another worthwhile resource in highway safety manpower development. Approximately 70 per cent of those employed in this field are trainable at the vocational-technical level. Recognizing this fact, The Center For Vocational and Technical Education at Ohio State University, under contract with NHTSA, recently completed a comprehensive project report on *Expansion Of Vocational-Technical School Programs To Accommodate Highway Safety Manpower Requirements* (4). Here are three recommendations from a total of eighteen resulting from this project.

1.) An effort should be made to have highway safety representatives on State and national vocational and technical education advisory committees. These committees should have data indicating manpower needs, forecasts, and present training capacities for highway safety occupations.
2.) A team of State and local highway safety authorities and

vocational-technical educators should be drawn together in those states with the greatest highway safety manpower needs to develop a statewide plan for highway safety manpower development.

3.) The vocational and technical education authorities at the local and State levels should work with highway safety authorities to determine the priority of highway safety manpower needs in relation to other local and state manpower needs.

In order to take maximum advantage of educational institutions for manpower development in highway safety, a continuing survey should be conducted within each State or region. For each institution that could contribute, it would be of value to know (1) what courses and activities related to highway safety are presently being conducted, (2) what courses and activities are included in future plans, (3) what courses or activities would the institution be interested in sponsoring, (4) what courses or activities the institution is capable of sponsoring, (5) why sponsored courses and activities are not in line with the institution's capability, and (6) what steps are likely to produce needed courses and activities.*

SUMMARY

The highway transportation system, which has contributed immeasurably to the socio-economic status of the United States, continues to expand rapidly. This expansion, typified by more drivers and vehicles traveling more miles at higher speeds, increases the difficulty of reducing the number and severity of collisions. Elements of highway safety management, a sub system designed to reduce death and injury on the highways, are becoming more and more difficult to coordinate effectively. They tend to be scattered throughout the structure of State and local governments.

In 1966, the U.S. Congress enacted Federal legislation which directed each State to establish a comprehensive highway safety program that meets specified standards. The National Highway Traffic Safety Administration, which has responsibility for carrying out the intent of the Highway Safety Act, provides Federal matching funds

* Dr. Myron Blee's speech delivered at the Atlanta Symposium, included in this report, speaks to the need for coordinating education and training programs within a state.

to States and their local subdivisions to implement the highway safety program standards.

In many instances, highway safety manpower development has been considered as part of program funding and implementation. However, recent studies show that manpower development has not kept pace with highway safety programming. The lack of realistic guidelines for assessing education and training needs, failure to involve educational institutions in planning, shortage of funds, and inadequate coordination have handicapped efforts to implement the Highway Safety Act.

The National Highway Traffic Safety Administration, lacking adequate funding for manpower, has been compelled to select five priority areas for support. (See Dr. Hartman's speech, p. 29). This leaves some rather large gaps in manpower development programming to be filled by other Federal agencies, by State and local governments, or by private groups. Unfortunately, private sector organizations, which supplied substantial support for education and training prior to the Highway Safety Act, have tended to decrease their support. Therefore, the primary question is: what plan is necessary to stimulate and coordinate appropriate support for manpower development programs from governmental and private agencies?

The Manpower Development Division of the NHTSA appears to be the most appropriate agency to provide the national leadership needed in highway safety manpower development. However, for this Division to be effective, it should work closely with highway safety program specialists from State and local governments, education and training specialists, top-level representatives of the private sector, and directors of national associations concerned with highway safety. Representatives from these groups should be active in developing initial plans and in reviewing and modifying them periodically as changes occur. Direct involvement by both governmental and non-governmental entities will help both understand and appreciate their distinctive roles in highway safety manpower development, thereby encouraging coordination and cooperation in implementing the plans. Expectations include an increase in financial participation on the part of both sectors.

The manpower studies supported by the Manpower Development Division of the NHTSA provide information that should be closely examined. In addition, the National Safety Council's Education and Training Committee has revised its publication entitled *Highway Safety Manpower And Training*, which reflects the thinking of key

administrators in highway safety. Their conclusions should also be considered.

It is illogical to suggest that the NHTSA Manpower Development Division, even with the participation and support of non-governmental agencies, will be able to solve all manpower problems. In general, the results of the manpower studies reviewed herein emphasize consistently that responsibility for implementing a national highway safety program, including manpower development, rests with State and local governments. The manpower problem in highway safety is too unwieldy for national control and management. Nevertheless, the NHTSA can guide and support the States and subdivisions in their efforts to implement comprehensive highway safety programs.

Another point of agreement reached by the manpower studies, with which this project staff concurs, is the need to improve State-level coordination of programs, with due attention to manpower development. This coordination can be facilitated by a (1) manpower specialist on the Governor's Highway Safety Commission or equivalent agency, or (2) a subcommittee functioning under the State's coordinating committee for highway safety. Any organizational structure created to coordinate the efforts of government, education, and the private sector in manpower development should work closely with the mainstream of highway safety management. Manpower development is not an end, but rather a *means* to implementing and optimizing the effectiveness of driver education, emergency medical care, traffic law enforcement and other program elements. Furthermore, it cannot be overemphasized that the private sector should be involved in an advisory capacity.

Program coordination, including manpower development, is also important at the local level. In this regard, the reader is referred to the *Community Action Program For Traffic Safety-Guides I-IX*, by the National Association of Counties Research Organization (2). This series of publications represents a comprehensive treatment of how communities can organize for traffic safety. Manpower development is an important element throughout these publications.

In addition to coordination within each governmental level—Federal, State and local—coordination is also needed among the three levels. The State level is in the best position to facilitate this coordination. At this level, officials work closely with and receive help from the Manpower Development Division. Further, the State-level office would assist communities by assessing their needs and matching local re-

sources devoted to highway safety programs. In short, the State coordinating group would serve as a catalyst for improvements in the manpower development effort.

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FORMAL SPEECHES PRESENTED AT THE MANPOWER DEVELOPMENT IN HIGHWAY SAFETY SYMPOSIUM HELD IN ATLANTA, GEORGIA APRIL 27-28, 1971

National Highway Traffic Safety Administration Manpower Development Plans .... DR. CHARLES H. HARTMAN

Problems And Issues In Highway Safety Manpower Development .... GORDON H. SHEEHE

Identifying Training And Educational Needs Through An Analysis Of Tasks And Performance Criteria .... HARRIS H. SHETTEL

Guidelines For Coordinating Education And Training Programs Within A State .... DR. MYRON R. BLEE

Manpower Development .... DR. WALTER A. CUTTER*

* Dr. Cutter was unable to attend the Symposium, but the project benefitted by his thoughts and experiences reflected in this paper.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION MANPOWER DEVELOPMENT PLANS

By

Dr. Charles H. Hartman

Deputy Administrator
National Highway Traffic Safety Administration

Presented at

Manpower Development in Highway Safety Symposium

Atlanta, Georgia

April 27, 1971

I appreciate the opportunity to join in this Symposium. Highway safety manpower development is a concern of the National Highway Traffic Safety Administration (NHTSA). It is also an area of interest and endeavor with which I have been closely associated over several prior years. Further, we in NHTSA have in recent months reached several basic decisions, and subsequently initiated actions based on those decisions which affect highway safety manpower development.

So this Symposium seems especially well timed, from my viewpoint, in terms of conducting a three-part effort: (1) addressing the issues and problems in this field; (2) clarifying the views and positions of the many agencies and organizations that are, or should be, concerned; and (3) evolving a strategy or plan for bringing about a significant improvement in the quality and quantity of manpower available to reduce deaths and injuries resulting from traffic crashes.

The Preliminary List of issues and questions sent to each Symposium participant in advance of the session has contributed to the identification of important issues and problems in this field. Additionally, Gordon Sheehe in the presentation just given has both expanded

on that preliminary list and provided further detail and thought on those several issues and problems. I expect that this process will continue as each of us participates in the Symposium. A crystallization of the most significant issues and problems will be one tangible result.

Since we seem well launched on the matter of issues and problems, my discussion will focus on the second essential part of the three-part effort I outlined earlier—that of clarifying a viewpoint or position. My remarks will reflect the viewpoint and position of NHTSA. These comments will relate only incidentally or reflectively to the views and position of other agencies and organizations as we in NHTSA are able to interpret them. As the views and position of *all* pertinent organizations are important, I hope that later in this Symposium each person in attendance will articulate the position of the organization he represents. Bringing each organization represented here to a position of public statement on these issues, based on thoughtful consideration of the facts, can alone be a sizeable contribution to manpower development.

I shall *try* to articulate the NHTSA position and plans for highway safety manpower development. I emphasize the word *try* for I've discovered recently that on this issue it is easy to be misinterpreted or misunderstood. This lack of understanding may arise out of inadequate communication on our part. It may also, in some instances, reflect highly selective listening; to put it more bluntly hearing what one likes to hear and conveniently ignoring the rest. Perhaps in some cases it has been a combination of these factors.

In any event, I feel constrained today by beginning this position statement with a negative approach—by saying what is *not* our position in NHTSA. Earlier this month, a newsletter distributed by a private sector group in Washington carried a report on its first two pages that was titled, "DOT To Quit Safety Manpower Effort." Anyone who read beyond this headline statement would quickly see that the reference to the Department of Transportation is wholly inaccurate and misleading. The article deals entirely with the NHTSA program and NHTSA is but one of several operating administrations in DOT. Those concerned with manpower development in air transportation (Federal Aviation Administration) are unaffected by NHTSA plans and operations. Likewise for urban mass transportation (Urban Mass Transportation Administration). Also, whatever manpower plans and programs exist in the United States Coast Guard, the Federal Railroad Administration, the Federal Highway Administration, the St. Lawrence

Seaway Development Corporation and the National Transportation Safety Board are continuing in these agencies. DOT is not planning to "quit the safety manpower effort."

In fact, even if the headline on this newsletter article had said NHTSA (instead of DOT) it would still have been a gross misinterpretation of the NHTSA position. The National Highway Traffic Safety Administration is *not* "quitting the safety manpower effort." As some passages in this newsletter report do accurately indicate, *NHTSA* plans withdrawal of support for scholarships, fellowships and similar long-term career assistance programs. This is not, by any reasonable stretch of the imagination "quitting the safety manpower effort." It does represent a selection of priorities within manpower development. And this selection of priorities will enable us in NHTSA, we believe, to aid and advance progress in manpower development nationwide. This will be especially true if the private sector renews interest and provides tangible support to at least some aspects of a total manpower development effort.

In order to document and clarify our NHTSA plans, I now refer to the public position on this subject which was taken over five months ago. In the Mid-West Seminar held in Milwaukee, Wisconsin, on November 8, 1970, under the sponsorship of the Highway Users Federation, I addressed this concern. For those in this Symposium audience who were also in attendance in Milwaukee I apologize for the reiteration about to take place. What follows in the next several minutes is a direct word-for-word quotation from the Milwaukee presentation. The only change made is that instead of saying NHSB or "the Bureau" (we were in November, 1970, the National Highway Safety Bureau) I have updated those references to NHTSA and "the Administration."

(BEGIN QUOTATION FROM MILWAUKEE SPEECH)

"The time has come, it seems to me, to narrow our sights and to broaden our vision regarding highway safety manpower development. That is, as individuals and as organizations we must stop emphasizing how big highway safety manpower development can be and concentrate instead on how *great* it can be.

The time has also come, it seems to me, for us to determine our priorities within the highway safety manpower development field. Manpower development is a big order; some things should take precedence while others will have to wait. There will never be enough

human or dollar resources available to do everything that needs doing by the day after tomorrow. That's why priorities are needed.

We've recently taken a look at our manpower development program in NHTSA in an attempt to determine our priority areas of emphasis. I'd like to share these thoughts of ours with you tonight.

There is no implication in what I say here tonight that NHTSA priorities for manpower development and the priorities set by you and the organizations you represent should be identical. In fact, there is so much to be done in this field that *we perhaps need different priorities among different organizations.* What is important is that we each identify our priorities, that there is an understanding of each other's priorities, that we earnestly work to overcome incompatibilities and that we all pursue our priorities in terms of a common commitment for improved highway safety.

Some time ago the NHTSA Manpower Development Division set forth an eight part manpower development mission which breaks out as follows:

1.) Identify task requirements;
2.) Identify the numbers and types of manpower required;
3.) Recommend national manpower policies and priorities;
4.) Develop plans for meeting the nation's manpower requirements;
5.) Identify the numbers and types of training resources available;
6.) Develop training resources and materials;
7.) Conduct or sponsor training programs;
8.) Evaluate program effectiveness.

Following this eight part scheme, the Administration has attempted in its short history to deal with all eight areas to the extent we have been able to secure both staff and funding support for highway safety manpower development. It comes as no surprise to this audience when I say that we have not had available to us either a sufficient number of personnel or a sufficient level of funding to make a significant impact in all eight areas. Our staff has made an honest and conscientious attempt to deal with each of these tasks insofar as they have been able. Each of you undoubtedly has suffered the same frustration as have we in that sufficient resources have not been available to do all we think needs to be done.

Recognizing this as fact, we have now made some hard decisions about where we should put our emphasis. I am using the platform

you have provided at this meeting tonight to indicate the nature of these decisions and the implications they have both for us in Government and for others concerned with highway safety manpower development. We feel it our responsibility to indicate as clearly as we possibly can what we feel we have the resources to accomplish and what we cannot undertake to do unless additional resources are provided. In this manner we hope that the lines of communication are opened wide so as to prevent second guessing one another about what we are attempting to do in manpower development.

From the list of eight tasks I outlined earlier as our manpower development mission, we have determined to give emphasis at this time to five of those tasks; namely: (1) recommending national manpower policies and priorities; (2) developing plans for meeting the nation's manpower requirements; (3) developing training resources and materials; (4) conducting or sponsoring training programs; and (5) evaluating program effectiveness. This is not to say that we will eliminate the other three tasks from our consideration. We will continue those activities at a low level, building upon a rather considerable amount of work that has already been accomplished in those three areas.

Our emphasis, however, will be on the five areas I have just mentioned. This presentation tonight represents a modest contribution to the area of recommending national policies and priorities. Obviously, much more needs to be done and we look forward to working cooperatively in this endeavor with people like yourselves and groups like the Traffic Education and Training Committee. We will also concern ourselves with developing plans for meeting manpower requirements in the nation. I look upon both these efforts as planning efforts which will require on-going attention but will not occupy a major portion of our time and effort once basic decisions are made.

The other three tasks: developing training resources and materials, conducting or sponsoring training programs, and evaluating program effectiveness will occupy a sizeable portion of our staff and funding effort. The Administration has already made modest contributions in the area of developing training resources and materials. The recent publication of guidelines for a basic training program for "Emergency Medical Technicians—Ambulance" is one example. We hope to make more contributions along this line and will welcome every appropriate opportunity to work with other organizations in the development of improved training resources and materials that can be used on a nationwide basis to upgrade the quality of highway safety.

We have conducted and sponsored and will continue to conduct or sponsor training programs of many types. However, the Administration will *not* include in this category the sponsorship of fellowships for long-term study at the university level. This is an area that was occupied by the private sector prior to the creation of NHTSA and an effort that the private sector can take justifiable pride in having supported. It is unfortunate that recent years have witnessed a withering away of this support. We urge reconsideration by the private sector with an eye toward reinstating and strengthening this type of manpower development effort. NHTSA does not intend to occupy this area unless funding is specifically made available for this purpose. Here is an excellent opportunity for private funds to fill the breech.

There is a considerable amount of manpower development and training going forward in the states and local communities under Section 402 of the Highway Safety Act. We are presently exploring ways in which this effort can be strengthened, better coordinated and otherwise improved. Some states, through the Governor's Representative, have exercised leadership in this regard while others have been less aware of the need. Bureau efforts to assist in this process have not been well organized owing to the press of other concerns. We believe a significant impact can be made in this area and pledge to deal more effectively with it. Our effort will be guided by the philosophy which seeks a better utilization of *qualified* people, institutions, and organizations already available in the states rather than the creation of new institutions or resources to accomplish the same purpose.

The task of evaluating program effectiveness has been dealt with but little to this point in time. We feel this is an extremely critical area and one that demands much greater attention in the months and years that lie ahead. This will require some planning, research, money and patience. It is of utmost importance for if all the money now being spent on manpower development programs of inferior quality were instead being spent on programs with real payoff, the great bulk of our manpower deficiencies would dissolve in a relatively short period of time. Our tools and procedures for making the necessary determinations as to quality, however, need considerable sharpening before such evaluative decisions can be made with real confidence.

In summary, I emphasize that these areas of: (1) developing training resources and materials, (2) conducting or sponsoring training programs, especially through 402 efforts, and (3) evaluating program effectiveness, as well as (4) recommending national manpower policies

and priorities, and (5) developing plans for meeting the nation's manpower requirements will be the NHTSA high priority manpower development areas for the immediate future.

(END QUOTATION FROM MILWAUKEE SPEECH)

The viewpoint position you've just heard is almost six months old. There have been no basic changes made in this position since it was first enunciated.

In the chronology of events since November, I'd like to highlight three actions which may help to background our discussion here today.

The first of these cannot accurately be called an "action" for it was entirely the opposite. In short, one, two, and even three months after the views and position of NHTSA were made known publicly in Milwaukee, the combined responses from the States, local communities, professional organizations, and the private sector added up to just a shade above zero; there was virtually no measurable response. I find this lack of response significant and a matter of great concern. Hopefully, this Symposium and those of you in attendance here represent the other side of the coin. Through your interest and actions a response now seems a realistic expectation. I hope all concerned will apply their talents diligently to making the response a positive one that will transcend "doom and gloom" statements and lead to concrete plans to overcome the problems at hand.

A second action is one the Administrator, NHTSA, took on March 23 when he wrote to 35 private sector organizations. That letter indicated NHTSA plans for ending one type of manpower development activity (viz., national level fellowships, scholarships, internships for graduate studies). The letter also asked that serious and thoughtful consideration be given by each addressee to how his organization might become directly and forcefully involved in a renewal of private support for these programs.

Some responses to that letter have now come to us. Others are still awaited. The dozen or so I've seen thus far can be characterized as falling into one of three basic patterns.

One pattern expresses an understanding of the need for making choices on a priority basis, outlines the specific contributions the addressee's organization has made and plans to continue to make to manpower development, and asks for clarification as to whether or not NHTSA will continue interest in and support of programs other than those in the fellowship-scholarship area. While there are only one

or two letters in this pattern we consider them a hopeful sign that there are concerned individuals and groups who are going to take positive steps to solve the problem. I call these letters the "can do" letters.

A second pattern, found among a relatively few letters, might be labeled as a middle-of-the-road position. This type of response runs to a combination of expressed concern, a recitation of portions of the Highway Safety Act, and a suggestion that private support has gone by the board largely because the public sector wanted it that way and caused that to happen. These letters tend to be lengthy and end with an offer to "discuss this with you" which in my Washington experience is often tantamount to saying "we're not going to do anything other than talk about it." I call these letters the "put-off" letters.

The third group of letters tend to be one-liners, or one paragraph responses. These are short, to-the-point hand-offs to a trade association or other industry-sponsored organization. They promise an answer from that organization. In a few instances they reflect an almost complete lack of understanding of the extent to which their industry-sponsored organization has withdrawn funds from manpower development activities over the past several years. I call this type the "cop-out" letters and there are currently more of these than the former two types combined.

A third action item in the chronology of events since November relates to some internal NHTSA changes. We have accomplished the transfer of our Manpower Development Division from the Research Institute to the Traffic Safety Programs portion of the Administration's structure. The intent here is simply that of placing this staff in a closer and more meaningful working relationship with NHTSA staff responsible for working cooperatively with the States and local communities in behalf of improved highway safety.

To further that working relationship and clarify our Manpower Development Program among our Headquarters and Regional staff, we recently issued an NHTSA Order on this subject. Dated April 2, 1971, (Order #900–2) this Order carries my signature; it includes three policy statements and six priority objectives. It also assigns responsibility for this function to the Associate Administrator for Traffic Safety Programs. There is nothing in this Order contrary to the contents of the Milwaukee statement. Indeed, the April 2 Order simply implements that earlier general policy statement.

The newest significant event in the chronology begins today in this

Symposium. I hope this presentation has been useful in providing a picture of the NHTSA position and plan. The next question seems to be, "What is the position of other organizations?" After that, we need to have the answer to, "Where do we go from here?"

In closing, and by way of summary, I offer the following statements:

1.) NHTSA is as interested today as it has ever been in furthering highway safety manpower development.

2.) If NHTSA is guilty of anything in its recent policy decisions and statements relating to manpower development, we are guilty of being honest and projecting a problem into the open where it might hopefully get some attention leading toward solution. The easiest thing in the world for us to do would have been simply to plod along without drawing attention to the matter; we chose another course because we truly care.

3.) We feel it is mandatory that we order our efforts and programs in manpower development in terms of priorities. We suggest that all concerned consider ordering their manpower development priorities and programs as well.

4.) We are aware that our own NHTSA manpower development staff are currently examining, along with others, possibilities for using non-NHTSA and non-DOT Federal funds for highway safety fellowships and other manpower development programs. While I applaud this effort to catalog and describe such possibilities, I am not optimistic that this effort will greatly aid the manpower development effort in terms of highway safety utilization of these many programs funded and administered by a variety of Federal agencies. In my opinion, most such programs are so tightly circumscribed by Congressional mandate or agency regulations that use of these funds and programs for highway safety will not be easily, quickly, or reasonably forthcoming in more than a few instances. I'd be overjoyed to be proven wrong on this, but I don't think I will be.

5.) Without documenting it in minute detail, we know without question that the private sector has reduced its funding support for highway safety manpower development over the past several years. This is particularly true among industry-supported organizations like the Insurance Institute for Highway Safety and the Highway Users Federation. According to data provided in response to our request last week, in 1971 IIHS will devote $157,000 to highway safety manpower development through grants to the Northwestern

University Traffic Institute and the New York University Center for Safety. In the same year (1971) the Highway Users Federation lists a total of $95,200 for manpower development; this figure includes $54,000 in staff expenses, a $10,000 grant to Northwestern University's Traffic Institute, $3,000 for publications and $28,200 under a miscellaneous category that includes workshops, seminars, conferences, etc. When one realizes that only a few years ago a predecessor organization to the Federation (viz., Automotive Safety Foundation) was annually spending in excess of $100,000 for fellowships in a single area of concern—traffic engineering—you begin to appreciate how private sector funding, particularly in the fellowship-scholarship-internship area has withered away.

6.) NHTSA is spending more money in FY 1971 than in any previous year in support of highway safety manpower development. Requests for FY 1972 funds will total an even higher amount than any previous year. NHTSA dollars spent for manpower development in the 1967–68–69 fiscal years averaged (over this three year period) $338,000 annually. NHTSA dollars spent for manpower development in the 1970–71 fiscal years averages (over this two year period) $925,000 annually. It is true that a sizeable portion of the 1971 manpower development funds is devoted to supporting our alcohol countermeasures program effort. It is also true that we clearly intend to phase out support in the fellowship-scholarship-internship area of long-term career development. Nevertheless, the budgeted dollar amounts substantiate our commitment to the national highway safety manpower development program.

7.) We believe that each State should play a vital role in assessing its manpower requirements, identifying its training resources, and planning and implementing a comprehensive manpower development and training effort to meet the needs of the State. We in NHTSA hope to offer assistance in this endeavor.

8.) We note that private sector groups have frequently, since passage of the Highway Safety Act of 1966, asked how their activities and programs might complement rather than duplicate official government programs. We recommend the highway safety manpower development area as a most promising one for private sector leadership and contributions.

9.) We in NHTSA hope that we and all other interested parties can develop a means to coordinate and cooperate with one another for the enhancement of highway safety manpower development programs.

The time and attention each of us devotes to highway safety manpower development will be a sound investment over the long pull ahead. We are all well advised to make that investment.

OUTLINE OF PRESENTATION OF PROBLEMS AND ISSUES IN HIGHWAY SAFETY MANPOWER DEVELOPMENT

By

GORDON H. SHEEHE

Delivered at the SYMPOSIUM ON

MANPOWER DEVELOPMENT IN HIGHWAY SAFETY

Atlanta, Georgia

April 27, 1971

Improved highway safety is a product of capable, zealous performance.

- —Legal requirements and standards will not achieve optimum results otherwise.
- —This applies to all levels—administrative, supervisory and operations.
- —It applies to all functions—legislative, accident investigation, data analysis, enforcement, education, engineering, licensing, motor vehicle inspection, care and transportation of the injured, etc.
- —And to all the officials, professionals and technicians.

Quality and productivity of highway safety activity is short of a reasonable level of expectancy.

- —Casual observation of performance reveals this.
- —A few studies—state of the art type and field surveys also document this.
- —The weakness exists in all functional areas—even in the acknowledged professional areas.
- —Fortunately there are many examples of outstanding performance though they are scattered and somewhat rare—which indicate what might be achieved everywhere.

Many might question the need for more and better education and training of highway safety personnel—whether it is a key to better highway safety attainment. I maintain that:

—Evaluation of highway safety activity performance is needed —we do not know how short of optimum present accomplishments are.
—The need for more sophisticated performance and greater productivity will be documented, I am sure.
—Considering the steadily increasing cost of government and exposure to accidents occasioned by the annual increase in the vehicle miles of travel, future tax dollars must buy more and improved highway safety activity at all levels—operations through executive—and in all functions—if optimum results are to be obtained.
—Improved methods and higher standards of performance must be developed and implemented.

But the question is—will training and education bring about more zealous, capable performance and effectiveness in terms of highway safety results.

—Assuming personnel selection standards are adequate and opportunities for workers to gain recognition and satisfaction are provided, then I maintain that effective training and education can motivate and provide the philosophy, concepts, skills and knowledge which will improve performance.

As I see it, the most basic and serious problems in obtaining improved highway safety performance are:

—Awareness or acceptance of the fact that present performance at all levels and by all types of highway safety personnel is short of a reasonable level of attainment—with but few exceptions.
—That many are unaware of the need and dimensions of possible improvement.
—That motivation is lacking to continually strive for higher quality and greater productivity of performance.
—That training and education are not considered essential in preparing, motivating and upgrading highway safety personnel by far too many.
—That training is deferred or dispensed with whenever resources—personnel time and finances—are short.

Other problems are:

—Lack of *adequate* training and educational programs—the preponderance of programs are inadequate in quality, scope and duration.
—Many are not geared to the professional and technical needs of the job holder or prospective employee.
—Few training and education programs are conducted for supervisory and administrative personnel.
—Some administrators are disillusioned or disappointed by the results of training provided their personnel or the educational preparation of recruits.
—Many existing training programs are too narrow in objective dealing with a specific activity and fail to provide the student with an understanding of the total highway safety system, the interrelationships of the many functions and the context within which the special activity will be applied.

These problems suggest shortcomings in the system of highway safety education and training such as:

—Inadequate analysis and identification of the objectives, performance standards and procedures required for satisfactory performance of each type of highway safety responsibility.
—Inadequate identification of the goals, concepts, skills and knowledge attainment which the training or educational programs objectives should fulfill.
—Shortage of texts, teaching outlines, materials and equipment.
—Inadequately prepared instructors and directors of training and education programs.
—Lack of a *system* for planning and implementing a continuing comprehensive training and education program for all highway safety personnel of all types and levels.
—Insufficient collaboration in planning and conducting training and education programs by educators and highway safety administrators.
—Absence of evaluation of effectiveness of education and training programs.

How to overcome these and other handicaps, solve the many problems and obtain answers needed to improve highway safety education and training is the concern of this symposium.

I propose that we focus our attention on several overriding needs:

1.) Identify who can be expected to take the initiative nationally and in each state to effectively stimulate those who should be concerned in obtaining or providing effective education and training.
2.) Determine what type of *system* or *organization* is needed to plan, organize, implement and assure utilization of training and education programs.
3.) Suggest how the necessary financing for all aspects of the programs can be obtained and who should provide it.
4.) Suggest how appreciation of the benefits to be derived from investment of time and funds can be developed among administrators of governmental agencies, educational institutions as well as others involved in highway safety activities such as judges, prosecutors, managers of safety organizations and private organizations involved in highway safety.

CONCLUSION

This is a big order. And I have not addressed myself to another important aspect of highway safety manpower development, namely, recruitment and selection of highway safety personnel.

These problems are urgent. They have been with us since the traffic problem originated. Solving them is a tremendous challenge and worthy of our best efforts.

IDENTIFYING TRAINING AND EDUCATIONAL NEEDS THROUGH AN ANALYSIS OF TASKS AND PERFORMANCE CRITERIA

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What I want to do today, and what I hope Dick Bishop wants me to do, is to "preach the gospel" of training technology as it's been developed over the past 10 years or so. (In fact, I should have on a celluloid collar and a slightly shiny black suit.) I'm going to tell you what *I* think training *ought* to be like, what you might call the eternal verities of training (although in this area, eternal means a year or two at the most). These will be the things we think we know about developing and evaluating effective training materials, things that people like Gagne, Lumsdaine, Mager, and Skinner, to mention a few of the prophets and sages in the area, have been "preaching" for some time. Your job will be to think about what I have to say in the context of your own particular area of interest. Because all of you have different interests and different opportunities to apply principles of training, I'm going to stick pretty much to general criteria of effective training and let you make the applications.

I think the fact that I'm not an expert in your areas of interest, by the way, is not necessarily a disadvantage. In fact, it might even be an advantage. Marshall McLuhen, the "Media is the Message" man, and this is a rough quote, said that he doesn't know who discovered water, but he's pretty sure it wasn't a fish. I think there is something very important in that statement. Maybe I can see some things or suggest things to you that you can't see from "the inside." I know from my experience in working with people in other fields that I can play a

useful role if I simply challenge them to prove to me that what they say they want to teach is, in fact, necessary to teach. I never tire of asking questions like: Why do you want to teach that? or, Give me an example of an actual situation in which somebody needs to know what you told me you wanted to teach them. It's surprising how hard these questions are to answer in many cases.

I'm reminded of a program that I did for the Army, developing a programmed course for helicopter pilots. We began by asking the various experts what it was they wanted us to include in our course. For example, weather information. In the original syllabus there were approximately 60 hours of course work in weather. When I talked to the weather expert to get his views, he said that this was inadequate. They needed *more* time to teach weather; he wanted *more* hours in the curriculum. But we ended up in our program with about 20 hours of weather. Not only was it less time, but we taught different *kinds* of things than he did. He was teaching, for example, the theory of weather, how weather forms around the North Pole, etc. He *wasn't* teaching a helicopter pilot what to do when he's flying toward a black cloud, and that's the kind of thing that I'm interested in (and more importantly, the kind of thing a pilot would be interested in). Do you go through the cloud, or over it, or do you turn around and go home? I don't care about polar air masses at that point. That's the kind of approach that challenges me and, I hope, you, as we think about the training and educational problems in the area of highway safety.

Since the title of my talk does include the words "training" and "education," I thought perhaps I ought to make a distinction between the two terms. Bob Glaser, a prolific and important contributor to the field of training technology, once said that if you know what you're teaching, it's called training, and if you're not sure what you're teaching, it's called education. I won't pursue *that* anymore except to say that there is, I believe, an important message in the notion that education is too often ill-defined in its objectives. This is a subject I will address a bit later. I prefer not to be too worried about the semantics of the distinction. I ask the same questions, regardless of whether you call it training or education. I still think it ought to be relevant and it ought to be designed to reach certain definable goals, whatever you call it.

So much for philosophy. Let me now address the main point of this talk, which is a little different than the title implies. I want to review the criteria I would use for judging the quality and effectiveness of

training (or educational) programs. These criteria could be applied to an existing program or to a planned program. In the latter case, of course, one would ask whether or not the planning makes adequate *provision* for the accomplishment of certain activities, rather than looking for their actual accomplishment.

I'll quickly get rid of two alternatives to training. There is always the possibility that we don't really need formal training, and that's something you ought to think very seriously about. Don't assume training is the answer to your manpower problems. There are at least two good alternatives that should be noted. One of them is selection. You select people who know how to do the job or know how to do some of it. The other alternative is to let the people learn how to do the job on the job. These are both good and legitimate ways of getting people to do the things you want. I suspect the latter is really what happens in many cases anyway. As I listened to your discussions yesterday, I suspect that there is an awful lot of OJT going on in the highway safety area. This is where you really learn "where it's at." But remember, practice doesn't make perfect, it just makes *permanent!* If people on the job are not doing it correctly, OJT is just perpetuating the error.

Training is expensive. The decision to train must be based on an analysis of the need. We have talked about criticality. You see a need for training because there's a very critical problem and you don't have trained people to solve it. How many trained people do you need; where do you need them? How much will it cost? What, really, do they need to know how to do? I'm not going to go into these issues. That's not the purpose of my talk. But, obviously, somebody has to determine, in sufficient detail, whether or not training is really the answer and, if so, how many trained people you need and where you need them and, of course, then how you go about getting them. In short, training is part of a larger system, and one cannot address training problems without also addressing these larger "system" questions *That* is a verity that will be around for a long time, and one whose neglect will cost many wasted man hours and dollars. I'm glad I can retreat, at least in this talk, into the relatively cozy world of training criteria.

What are the criteria for effective training? Let's assume that I was "inspecting" your training program or that I had your proposal in front of me for a training development project. These are the kinds of questions that I would ask and the areas that I would look at to evaluate this training. If there was any word that came through loud and clear

yesterday it was "quality": We need quality training. In my language, this is what I think of as quality training.

The first thing I would look for is a definition of the target audience. Who is "in," and why; and who is "out," and why? This means everything about that audience that may be relevant to training, such as the age of the audience, sex, socioeconomic level, what it already knows about the subject, etc. The more we know about that audience, the better we can assign people to our training and design training for our people. It's a truism, but we frequently neglect it—we have to start "where they are," not "where we think they are." There's no point in kidding yourself. You can base your estimate on how many college credits they've had. You can base it on previous experience. These are easy to do. You simply ask a person: Where did you go to school? Where did you work? And you can try to make some estimate of relevant skills and knowledge on that basis. But that's risky because these experiences don't really mean the same thing. Experience A is not the same as experience B, and school C isn't the same as school D, and even school C isn't the same from one year to the next because instructors and curriculum change. In short, you really don't know what you've got. One remedy to this problem, if you have the time and money—they usually go together—is to give your entry students a relevant pre-entrance examination. If you really want to be sure the person is qualified to enter the system, find out what he really knows. (As an aside to this point, it is my conviction that most formal entry requirements are too strict, and that the people who "get in" are either over-qualified or qualified in irrelevant areas.)

The second criterion for effective training is a big one, and yesterday's discussion certainly went all around it and through it every which way—have we really defined the job? Have we defined the task that we're training for? Do we know what skills and knowledge are required to adequately perform the task? Have we done a task analysis? These are all different ways of asking the same basic question. The question is not simply "have we done it," but "have we done it in a way that is objective?" Would we all agree that we have stated the task properly? I get the picture from listening to you that the various tasks and jobs that you have mentioned are not well defined. It's pretty hard to design a training program if you don't know what the job is.

How can we find out what it is? If there are people who are *correctly* performing this job, whatever it might be, you can go out and analyze what they're doing. If there aren't people performing the job,

or they aren't performing it correctly (what we call "exemplar performance"), then you have to "make up" the job. Now you are doing job design, not job analysis. And I suspect, in many areas, it's a combination of the two. Some of the things being done on the job shouldn't be done. Some things that should be done, aren't being done. These omissions and commissions must be defined. Another source of job knowledge is documentation. In the military, frequently, you can look into very detailed documentation as to what a person *ought* to do in a particular area and if you accept that documentation, fine, you can teach to that. That, in short, becomes your primary source document for developing your instructional materials. Be careful, however, that it doesn't lead you astray. Some of these materials are prepared by people who know as little about "the job" as you do. Remember the weather expert.

There is a well-defined procedure for doing these kinds of analyses, and it is called task analysis. It's one of the areas where I think we're pretty strong in training technology. We know how to go out and do an analysis of the job. In fact, the American Institutes for Research (AIR) "invented" the task analysis approach. Bob Miller, who was at AIR a number of years ago, was a pioneer in the area. It's now a standard procedure. The military, for example, wouldn't think of developing a training program without doing a thorough task analysis to find out what they're going to teach. They can't afford to have too much "slop" in the system. Industry is beginning to take the same approach. They can't afford to be teaching people things they don't need to know. It's too expensive. While the procedure is well defined, it is time consuming to do. You will have to put aside resources to do these analyses. The alternative, of course, may be even more expensive—teaching things to trainees who will never use them.

Now for criterion three. It is related to the above very closely. It is this: How well have you defined acceptable job performance limits, or tolerances, or criteria for terminal performance? How well have you defined the limits within which you're willing to say that the job has been satisfactorily performed? This analysis is often part of the task analysis, but it's treated here as a separate area because out of this comes your testing and your evaluation procedure. For example, the Human Resources Research Organization has completed an excellent analysis of the driving task, but they did not get into the area of defining the limits within which the tasks should be performed. (Let me

hasten to add—they were not supposed to get into this area, as defined by their DOT contract. There is a separate effort being devoted to this critical area.) They cover car following, lane changing, passing, etc., and all the steps that you go through to perform each task. But they don't define what "acceptable performance" is. These are the two pieces of information, though, that are absolutely vital for someone who is developing a curriculum for training these tasks. It's interesting that in this area, one we have been teaching for so many years, that these two vital pieces of information have been lacking. So here we are, in 1971, finally getting around to trying to develop some solid bench marks around which we can make some decisions about driver training. (Our study at AIR on developing standards for driver training devices is a similar baseline effort.)

Now, let me just say a little about measurement and some of the ways we try to measure performance. There is a tendency, particularly in "education," to use academic testing approaches, such as a written test. But if you have a performance task, if you're teaching people to *do* something, the best way to test them is to get them to do it for you, not to talk about it, or describe it, or define it. So we have, in current training technology, a strong emphasis on performance testing rather than some form of academic testing.

There are basically two ways of looking at measurement, and they are reflected in two terms that are highly visible in the literature these days: criterion reference and norm reference. In my approach to the world, I'm not nearly as interested in norm referencing as I am in criterion referencing. What that means is that I'm not too interested in separating a group along a normal curve so that I can say that Johnny is twice as good as Bobby, or is in the 70th percentile of all those who took the test. What I'm really interested in is getting all trainees to do what I think they ought to be able to do in order to perform the job. I'm not interested in individual differences, I'm interested in getting them to perform at a certain level. That's what is meant by criterion reference testing. It is testing to a well-defined set of standards. In programmed instructional circles, many of the contracts we get have a paragraph written into them that says we will achieve 90/90. This means that 90 percent of the people in our training program will achieve at a 90 percent criterion level on the terminal performance test. That is criterion referencing. "Everybody's" got to learn "all" they need to know in order to do the job. It's a big order, but it's often

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written into these contracts. I think if we always thought about training in these terms, we'd sharpen up a lot of our training. (I wonder how many school teachers or college professors would be willing to have their paycheck depend on the level of *criterion* performance of their students?)

Two other terms that I might mention in connection with evaluation of training are *formative* and *summative*. These are almost becoming "buzz" words now in training circles. Formative evaluation is the evaluation you do during the development of your training. It is diagnostic; it tells you whether the various component parts of the package are effective. Summative evaluation asks a bigger question. Can people do the job after they get through with the training? If you're teaching people how to drive, it's the total driving task.

People often get carried away with summative evaluation procedures. In the area we're discussing here, it would be easy to say that the ultimate criterion of effective training would be reducing highway deaths. That seems to be the goal that everyone is trying to achieve. Yet, I would say that that would be a very inappropriate kind of evaluation measure to apply against a particular training program because highway deaths are not going to be influenced very much by your particular program. They are influenced by many other factors in addition to your program and over which you have no control. So, I believe, we have to be careful that we don't get carried away and say everything we do is going to reduce highway accidents. If all the training programs were evaluated on that basis, we probably wouldn't have any training left. We'd throw them all out. Would a home economics teacher claim that her ultimate objective is to reduce the divorce rate? That's not what she's trying to do. She's trying to teach her students to bake a cake, and the way you evaluate her performance is to eat a piece of that cake. So let's stick to the immediate goal, and not get carried away into these very grandiose statements about how we are going to achieve some big effect out there in the big world. I think we get outselves in trouble if we do too much of that. We promise things we really can't deliver.

So far, I've avoided using a term that I'm sure all of you are familiar with—behavioral objectives. You are probably sick and tired of hearing about behavioral objectives. But when you define the task and when you know precisely what you want to teach and you have well-defined performance criteria, you have, in effect, a well-defined set of behavioral objectives. Many of you are probably familiar with Mager;

I've brought his book along to look at.[1] It has probably done more than any other single item to sharpen up our thinking in this area of defining our training objectives.

Mager, to oversimplify, rejects training when it is based on objectives with the following terms: *to know, to understand, to really understand* (much better than plain old understanding), *to appreciate* (and, of course, if you want to do better than that, *to fully appreciate*), *grasp the significance of*. When he looks at training objectives, he wants to see them written with action verbs like *to write, to recite, to identify, to differentiate, to solve, to construct, to list, to compare, to contrast*. These are things that we can attach objective measures to. We can all agree what it is we're talking about. If you don't believe me, just ask somebody what he means by music appreciation, or what a "good citizen" is. Suppose we broke this group up and asked each of you to go off and write a curriculum for teaching an "appreciation of good citizenship in driving." We'd probably have as many approaches as there are people here. That shouldn't be true. We should define what it is we mean by good citizenship first, then we can sit down and write a training program to teach it.

Mager also mentions *conditions* of training. He wants to know under what conditions is terminal behavior elicited. If you want to teach a man to fix a radar set in the arctic, you better teach him how to do it with his gloves on. Don't keep him in the classroom where it's 70 degrees, working with his bare hands. It's the kind of thing we tend not to think much about. Under what conditions is our trainee going to be operating when he is "in the field"? If you're using a Breathalyzer in the classroom, that's one thing; if you're using it out on the highway, under stress, that may be quite a different thing. That reminds me of a fault I've seen so often in training. A nurse instructor gets up in front of a room to teach a group of nursing students how to give an injection. She has the standard orange and the needle and she gives four or five injections to the orange. Here's a person who is the expert at giving injections, giving more of them and still becoming better at giving injections, and there are the people who don't know how to give them, sitting and watching her. I can just see this happening in a Breathalyzer program. The instructor who knows how to use it is in front of the class using it and all those who don't know are out there

[1] Mager, R. F. *Preparing instructional objectives*. Palo Alto, California: Fearon Publishers, 1962.

watching him. This is bad training.[2] To return to my point, think about the conditions under which your people are going to be performing and see if they have been taken into account in the design of the training package.

Which brings me to the fourth criterion. This is kind of a broad one and I'm not going to get into the details of it. It has to do with whether or not you've put together an effective total training package. Have you taken care of individual trainee differences? Even though you do an effective job of selecting people, you still are going to get individual differences. How do you help the guy who's having trouble, who's slower than the others? Have you taken into account his problem? Have you allowed people who are very bright to move ahead more quickly than the others? Have you trained your instructors to present the material as it was intended to be presented? (So many effective, well-designed programs are wrecked on this rock.) This was mentioned yesterday, and I think it's a critical question. How do you train instructors? Do you keep them? Have you used your media effectively? This is a subject worthy of a talk all by itself.

And finally, have you used good training techniques? I'll list only a few things under this. They might be called "principles of learning" or "training parameters." Every training program uses them whether it was intended or not. They are either done well or done poorly—*they cannot be not done!* First is the sequence of training. How did you decide to teach the material in the particular order in which you're teaching it? And there are a number of orders possible. Easy to hard is a typical one. Beginning to end is another. You teach it in the order in which the job is performed. But there are some people who say, and there is evidence to support it, that some tasks are better taught backwards. You start at the end and work to the front. In teaching a child how to tie his shoelaces, for example, you'd get a lot farther ahead if you tied the shoelace up to the last step and let him finish it, because then you could say, "Great, you just tied your shoelace, now let's go back and do that again." This time, tie it up to the *next* to the last step and let him finish two steps. It works. The point is, there are some interesting questions about sequence. Maybe even in driver training there are tasks that would be better off taught backwards. It's something to think about. (Maybe backing up would be a good place to start.)

[2] There is, of course, a legitimate role for demonstration in training when used as an introduction to actual performance and not as a substitute.

Another training parameter is active student responding–we've just mentioned this in connection with the Breathalyzer and giving shots. Any time a person is standing up here like I am doing for as long as I have, and you haven't produced any active responses, *that* is bad training. Get people to perform, as soon as possible, the task they're supposed to be performing. Next, learning is best accomplished in small steps. We frequently find instructors on an ego trip. They want to show how good they are, so they overwhelm their students with their knowledge and their wisdom. They don't really care where the students are. They are having a good time showing how bright they are. Small steps means breaking things down so that the students are following you. Finally–feedback to the student. This is sometimes called knowledge of results and sometimes reinforcement. While they are technically different, the mechanics are the same. People (and trainees *are* people) like to know where they stand. They are expending energy in learning and they want to know if they are getting something out of it. The "pay off" can be simply the knowledge that they are, in fact, learning. Simple, but effective in keeping them motivated to learn more.

So much for the criteria for effective training. What do you get if you put them all together? Good training is one thing. But these principles turn out to be the same ones that are an inherent part of programmed or self-instructional techniques. I haven't used these terms because I don't think all instruction should be programmed. I think a lot of very effective instruction can be accomplished without it. My criteria *can* be used by an instructor before a class of 30 students. The *principles* should be there. You should have active responding; you should have well developed objectives; you should know what the criterian performance is.

Programmed instruction has some very definite advantages, however, and I'll just mention a few. First of all it takes care of the individual pacing problem. You can let trainees move ahead at their own speed because they are each working with their own set of materials. This takes care of one aspect of individual differences having to do with what could be called the rate of learning. Secondly, you can send these materials out to the trainee. We've heard a good deal about the need to upgrade current skills. We have a lot of people out in the field who are not adequately trained, or who are not prepared to assume new responsibilities. Can you bring them in to the university? Can they leave their jobs? Probably not. But you *can* send effective

training out to them. In fact, we're doing this in a five-year grant that I have with NIMH to train industrial nurses to be more effective at recognizing emotional problems among employees. We developed a large training package which will take about 80 hours for the nurse to complete. They cannot leave their jobs. Very few companies would let the nurse go to a continuing education course. But many of them *will* let the nurse spend two hours a week working on our materials on the job. In the end they will be well-trained nurses.

You also have built into the programmed instructional format active responding. That is the way it's designed. You also have built-in feedback. Again it's part of the design.

You also have something I haven't mentioned, but I think any training program that doesn't include this is suspect. I'm referring to the tryout and revision procedures that are an inherent part of the programming procedure. I defy anyone to design a program the first time and send it out in the field and expect it to work. Every program we write at AIR goes through at least one cycle of tryout and revision. We're not smart enought to write a good program the first time or even, sometimes, the second time. We've even gone through four cycles before that program will reach the criterion level we expected of it. (Remember 90/90?) The reason instructors and trainers in general don't do this more than they do is because they often don't know where they're going anyway, so they wouldn't know if and when they got there or not. We know because we've got defined goals that we have to reach. If we don't reach them, it's back to the drawing board. (We never blame the student, either, for his failure to learn. Programmed instruction is student centered, not instructor centered.)

The buzz word in education and training today is *relevant*. The procedures and techniques that I've been talking about are designed to achieve just that relevancy. Students simply aren't going to sit still anymore for things that they can't relate to or can't see any use in learning. You may not agree with that approach, but that's the way it is. I happen to think that, in essence, they are right. They're paying money for this training and education, so it ought to be relevant. It's our job to see to it that it is. A word that is associated with this approach is *accountability*. We're all being asked to be accountable for what we teach. Performance contracting is one of the ways in which accountability is being handled.

A summary of all this would simply be that we're talking about quality instruction and what I've tried to do is mention some of the

things that I would look for in any training or education project to answer the question: Is it quality instruction? Let's not forget that quality costs money. You don't get any of this cheaply. The cost per hour of programmed instruction, for example, runs from $2,500 to $3,500 (sometimes more) per hour. If there is a lot of task analysis work to be done and expensive media development, it might be considerably more. It's not only expensive, but it takes time to develop good training. You're not going to get this type of material fast.

As a final comment, I've got to get in a plug for AIR because we're there and we can be used. We're a resource. Unfortunately, we have to get paid for what we do, even though we are a nonprofit organization. But, we are a resource that you can turn to to get help in developing effective training materials. Business, industry, the military and various government agencies have been doing this for the past 25 years. End of plug.

Thank you for your attention.

GUIDELINES FOR COORDINATING EDUCATION AND TRAINING PROGRAMS WITHIN A STATE

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As I come to this seminar on Manpower Development for Highway Safety, I am well aware that I am distinguished here by the fact that I am not a distinguished contributor to the field of highway safety. Perhaps it will prove that I have provided contrast in the program lest you conclude that the brilliance of the luminaries who have preceded me to be the norm.

Without for one minute posing as a specialist in your field, I do come here with a purpose. I propose to put in perspective the problems which you have been and are facing in obtaining manpower development training programs from educational institutions; and then I shall suggest a framework which, in my judgment, has much promise for increasing the liklihood that appropriate programs for the development of manpower required for highway safety functions will become more generally available.

In his efforts to prepare me for this assignment Dick Bishop has supplied me with a wealth of current materials which I have studied with great interest—and with some degree of amazement.

My perception of the materials brings me to the conclusion that there have been few significant developments in the last decade; for it was nearly that long ago when Dick Bishop and Tom Seals first came to me to ask for help with their manpower development problems.

Now, as then, there appears to be full agreement that the training programs for the development of manpower for highway safety have serious shortcomings—and that there are grave deficiencies in the manpower available to perform the functions that are dictated by concerns for highway safety.

What a great tragedy for the American people that a decade should pass with little if any progress in the establishment and operation of programs which are needed in order to provide manpower with the diverse capabilities required to bring at least a reasonable degree of safety to our highways! If I have been at all accurate in my perception of your dialogue at this seminar I suspect that you are not at all surprised by my observation; for it has seemed to me that you have adopted a theme which sounds like the plaintive cry, "How long, Oh Lord, how long?"

Yet this seminar is dedicated to the proposition that some workable guidelines will emerge—to the end that manpower will be developed for the performance of tasks required for the attainment of highway safety. So let's see what, if anything, I have to offer.

First, I would like to observe that the problems with which you have lived too long are not at all unique to the field of highway safety manpower development. It is no great credit to those of us who spend our energies in educational institutions that the development of manpower for the range of complex functions required for societal survival poses serious difficulties.

Cultural anthropologists have observed that there are certain fundamental processes that have to be carried on in every culture; and the performance of those processes require that the people generally learn skills and predispositions to action. The continued neglect of one or more of these processes has accompanied decay of every culture.

Fundamental among the processes are:

Keeping the population healthy and strong.
Safeguarding the people from accident and disease.

Among the eight or ten others are:

Maintaining physical security and peace.
Conserving natural resources.
Utilizing wholesome activities for leisure time and
Providing opportunities for earning a living.

It is not our purpose to develop this line of reasoning very far, but there is evidence to suggest that our educational institutions do have difficulty responding with the multi-discipinary, multi-level programs which are required for the development of manpower for a variety of societal processes.

And, if I understand your requirements at all, manpower develop-

ment for highway safety does require a concert of educational programs involving multi-disciplinary instruction and research at the graduate level, intermediate levels of instruction and training for administrators and supervisors, and vocational and technical programs for the development of manpower.

I believe that your difficulties in obtaining appropriate manpower development programs are akin to those of people concerned with conservation, health and leisure time. In your quest for manpower development programs you are not alone; and there is the distinct possibility that the "solution" to your problems may have applicability in other areas of concern as well.

Secondly, it appears to me that we have gone about as far as we need to go in the development of new types of educational institutions to meet special educational purposes. In this country we have tended to "invent" a new type of educational institution once we have been convinced that the existing institutions are not responding to practical needs for services. We have seen the development of the land grant college to undergird industry and agriculture, and we have seen most of these institutions become much like the "great centers of learning" they were intended to supplement. We have seen the invention of the "community college," and we have seen the development of vocational/technical centers as the community colleges have been perceived to be slow in responding to needs for occupational training.

It is my judgment that we cannot expect to obtain the programs you need through the proliferation of new institutional forms. It is high time (and this is my third and principal point) that we seek to devise and to employ control mechanisms which prompt educational institutions to utilize their differentiated resources in concert to meet well defined educational objectives.

We will not accomplish this, I fear, until we, one, make a distinction between the responsibility for assessing educational needs and the responsibility for providing educational services, and, two, use public money for education to cover the cost of services provided rather than to cover the cost of institutional operations.

This may seem to be complex, but it isn't. It is no more than to say that there must be a mechanism outside the educational institutions that determines what goals and objectives those intitutions are expected to fulfill; and there must be a means to channel public money to educational institutions on the basis of the services rendered.

In terms of our concerns in this seminar, this is to say that we may not be obtaining the manpower development programs and services you need in part because we have yet to define needs in such terms as facilitate the development of such programs—and, in part, because there is no mechanism through which public support will be provided on the basis of services rendered.

We have liked to think that boards of education have had as their primary function the assessment of educational needs; yet, in practice, that is simply not true. School boards at all levels are more likely to be concerned with institutional operations—at either the policy or administrative levels—than they are with the definition of educational needs. Too often school boards, like the institutions which operate under their jurisdiction, appear to equate institutional well-being with public need.

In view of what appears to be a broad need for a mechanism for the assessment of educational needs in many fields, it is tempting to argue that school boards need to be revitalized, and their principal concern should be with the setting of educational goals. Practically, I think that we need to resist that temptation at least for the near future. Perhaps the time will come, however, when state boards of education, without educational institutions of "their own" to operate, can and will serve as the agency responsible for the assessment of educational needs across the board.

In the meantime, I believe that we will be on the road to obtaining the manpower development programs for highway safety when in each state there is established an agency which has the designated responsibility—and is held accountable for the assessment of educational needs and for the definition of educational objectives in this one area.

If this is to be effective, educational needs must be quantified and expressed in such terms that the agency could contract for their delivery—and be able to know when the contractor had discharged its obligations.

The business of the needs assessment agency is the determination of manpower needs for highway safety—what those needs are at present, and what they can be expected to become in the future. The agency must resist the easy task of estimating numbers of people who have completed designated levels of education; rather, it must do the difficult—it must express its needs in terms of the numbers of people who have the specified kinds of knowledge, skills and attitudes which

are associated with optimal performance of the various kinds of tasks that must be performed in order to achieve highway safety.

What tasks need to be performed? What knowledge, what skills, and what attitudes (predispositions to action) are required for the effective performance of those tasks? Then, how many people in each of the job categories so defined?

Needs assessment in these terms is not an easy job. Nor is it a job which either "laymen" or "professionals" can do alone. It seems to exact the kind of professional/lay teamwork needed throughout education to assure expertise tempered with practical judgment. It should be envisioned that the needs assessment agency will consist of a representative lay group which is served by a competent professional staff with responsibilities limited to the concerns for needs assessment.

Through the professional staff board manpower development goals are translated to "educational specifications" which can be used as the basis for "contracting" between the needs assessment agency and educational institutions for the delivery of services designed to meet the broad goals.

This brings us to the other side of the coin, viz., responsibility for the design and delivery of educational services required to meet the manpower development needs. It is my judgment that this responsibility should rest with boards which operate educational institutions and with the professional staffs of those institutions. The needs assessment agency should know what its manpower development needs are—and it should be able to determine when an institution has discharged obligations it may assume for meeting those needs; but the educational institution should be responsible and accountable for devising and operating programs to meet those needs.

This separation of responsibility can be achieved best, I believe, under a contractual arrangement in which the needs assessment agency contracts with educational institutions for services to meet specified objectives.

In order to be effective, the contracting authority must have funds with which to purchase services—and the educational institutions must be dependent upon funds available for performing contracted services. Hence, the needs assessment authority for highway safety must have available funds which it can use to buy services; and the pattern for funding educational institutions must assure that the institutions will need to sell services.

Thus, it is my thesis in this seminar that we need to establish in each state a mechanism through which assessments of educational needs can be made—and through which resources needed by educational institutions will be channeled for the delivery of services to meet those needs.

It appears entirely reasonable to me that the Governor's Commission on Highway Safety could be so constituted and so staffed as to permit it to play the role of the needs assessment/contracting agency. While I would hope that this would be the case, I am not prepared to make a case contending that the Governor's Commission is the ideal agency in every state for this role.

But the Governor's Commission does meet what I consider to be two controlling criteria for the selection of an agency to perform the needs assessment/contracting function. In the first place, the agency must be free from any ties or loyalties to any part of the educational establishment in a state. Its concern must be for obtaining needed educational services rather than with safeguarding the well-being of any institution or type of institution. Secondly, the agency must have both concern and expertise with respect to highway safety. Good intentions will not do the job; the agency must have a strong commitment to the attainment of highway safety through the development of manpower needed to perform functions which will achieve that end.

It is my impression that the neglect of either of these criteria in the selection of an agency for the proposed needs assessment/contracting role will decrease the chances for success.

In summary, let me say:

1.) For a long time we have suffered from serious deficiencies in manpower available for highway safety programs, and our training programs continue with grave shortcomings.
2.) Our experience in trying to obtain appropriate manpower development programs for highway safety is not unlike that in efforts to obtain services for other vital societal processes.
3.) We cannot expect to solve our problem through the further proliferation of institutional forms.
4.) The establishment in each state of an agency with responsibility for needs assessment and for contracting for services for highway safety manpower development from educational institution is worth considering.

Will you consider it now? And if you find that the proposal has merit, will you polish it up to suit your purposes and give it a try?

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MANPOWER DEVELOPMENT

By

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Before attention is given to the mechanisms of manpower recruitment and development (training and education), consideration should be given to certain hard facts. Hard facts are in short supply, but here are a few which do not need research to establish their validity.

1. Traffic safety is not now, nor has it ever been except in a limited number of states and in these for only short or longer periods, a top priority in the federal government or in the states.

The importance of a program is measured by the continuing top level importance assigned to it, the substantiality of financial support and in the nature and comprehensiveness of operative laws and regulations designed to aid the program in realizing its mission.

2. It is quite unlikely that the status of (1) will change dramatically, for these, among other reasons. The federal government and most of the states are not solvent. Budgets are inadequate and must give first priority to mandated expenditures and then do what they can in the areas of poverty, health, education, crime and now ecology. Traffic safety does not rate equally with these. One of the paradoxes is found in the comparative ease with which funds are found for the construction of new roads, while no such funds, in scale, are found to control the safe use of these roads. In any case any large scale em-

* *Note:* There is one striking exception to the general lack of formal training among state government employees concerned with traffic safety and that is state highway patrols. Here is found training before employment as a condition of employment, and periodic refresher training. Progressive police forces have also taken advantage of university centers of police training for both supervisory officers and patrolmen.

ployment of new personnel in traffic safety in the next decade is quite unlikely.

3. There is little tradition generally (there are always some exceptions) among the states of preliminary training to determine fitness for positions, or for posthiring, and for refresher training. Learning occurs by entry indoctrination, apprenticeship relationships and horizontal osmosis. There is little evidence of education in the broader aspects of the traffic problem which would give pertinence and meaning to particular functions in the entire system. One of the many discoveries made by The Center For Safety, New York University, in the ten years of the Traffic Management Program was that personnel of one section in a department often do not know what other sections do, while major state departments had only very general notions of what other departments do that were concerned in some degree with traffic safety.

Thus the value of synergism was effectively squashed.

4. Finally, one of the present day facts of life is the gradual withdrawal of nongovernmental (private) funds to support the education of specialists and generalists. It is true that some of the funds formerly contributed by private groups were of the token variety, but other groups made substantial contributions over the years. A great amount of innovative and exploratory training and education was supported and this has enriched the field substantially. Now these funds are fast disappearing.

There are two possible reasons for this withdrawal. The first is the normal practice of withdrawal by the private sector whenever the federal government enters the picture. This is a shortsighted point of view but one that is almost invariable.

The second is found in the early years of the National Highway Safety Bureau, when its heavy emphasis on hardware, notably the vehicle, resulted in a tacit denigration of other important factors essential to a containment of the traffic problem. One of these has been education and training of needed manpower. Safer vehicles are of primary importance and their value cannot be depreciated. But, vehicles are but one element in a complex problem. As a complement to safer vehicles, safer drivers might be mentioned, but too many have given up on the driver.

It is only natural that donors from the private sector would take their cues from what the federal government agency emphasized. While there was token attention paid to many of the areas identified

by standards, no great intelligence was required to see what the Bureau was emphasizing. This emphasis provided all the excuse necessary to drop out. Now that the agency's program is becoming more balanced, a resumption of private funding should be expected.

The foregoing points are advanced so that there may be understanding of some of the affective elements of which we must be aware. The traffic problem is not an intellectual problem to be solved by nice little formulas and techniques. Too many of the most recent approaches to the problem have been characterized by extreme naivete consequent upon a lack of any or extensive experience with the many facets of the problem. Whereas, a superficial observer would see the foregoing points as negative, the thoughtful student and practitioner will see them as realistic, not as road blocks to accomplishment but as factors which cannot be ignored in developing our approaches to manpower. Knowledge of obstacles puts a premium on the skillful management and development of present resources while plans are being made for securing additional resources.

A simple fact, too often forgot, is that the whole apparatus of traffic safety measures should be evaluated in terms of its efficiency in decreasing the number of accidents with their toll of death, injuries and property damages. Adding manpower is no guarantee of increased efficiency within an agency or department, unless manpower is making maximal contribution to the efficiency of the operation, nor does it guarantee an effective contribution by the agency to the total traffic safety program. Ignorance of the nature and scope of a total traffic safety program means all too often that state agencies and departments simply follow mandated routine procedures without realizing that they are integral parts of what should be a comprehensive, related program—in other words a system. Failure to adopt a systems approach means that the synergistic effect of a total effort is lost, and this has an important relevance to the whole question of manpower.

EVALUATION OF PRESENT MANPOWER STATUS

The normal practice of any agency head is to say that he needs more personnel. Often, he does. But, is computing manpower needs, there should be a thorough study of agency objectives, the scope of its mandated program, job methods, operating procedures and performance standards, to mention some of the criteria. In brief, is the most efficient use made of personnel? If the answer is affirmative and the agency

cannot keep up with its responsibilities a case for more personnel may be said to be established.

Such evaluation requires the development of evaluative criteria which can be generally applied throughout the country. Here, a word of extreme caution must be given. There is too often the same tendency in developing evaluative criteria as is found in developing questionnaires. Someone, for some purpose, wants to find out something. A questionnaire is begun. Items are added. These tend to fall into two classes: (1) What is *important* to know; (2) What is merely *interesting* to know. And, if the questionnaire is passed around for suggestions, it does nothing but grow until the end result is an unnecessarily long and partly irrelevant document.

The same thing is true about the development of evaluation instruments. It is not difficult to sit in an office and concoct all sorts of questions and criteria, garnered from other studies or out of the air. Yet, the finished instrument may be too formidable, too long, overly detailed, forbidding and, thus, for all of these reasons, unacceptable. Much of the difficulty arises because those who devise these instruments often lack sufficient first hand knowledge of how state governments work, how the departments and agencies have developed (with functions being added by successive legislatures or executive orders which do not properly belong in particular departments) and how additional functions have not regularly resulted in additional staff to implement these functions. While we may say that state departments should be characterized by the same methods, etc., as are true about businesses, all too frequently they are not. Administrators think differently and in terms of the nature and past methods and practices of the departments. This does not suggest intrinsic inefficiency, at all, quite the contrary.

All of this adds up to the conclusion that evaluation instruments must be simple in outline, practicable in terms of the department's history and capabilities and as short as is humanly possible. No instrument should be devised and issued without comprehensive field testing or without making use of the advice and experience of persons actually working in the departments. This should mean that an instrument will be developed that is both acceptable *and* efficient.

Extreme caution and tact must be used by any personnel making such evaluations. There should be evidence of both training and experience. Frequently, there is resistance to any evaluation by any outsiders. It is felt that such evaluations imply inefficient management.

Taking all factors into consideration, it may be better strategy in certain cases to forego pressing for intensive evaluation, substituting instead a model or a generally accepted plan of operation for similar agencies against which a particular department may measure its own performance.

In any case, authority at the federal level should *not* be used to compel agency evaluation when it is clearly inexpedient to do so. This may look like retreat but it is realistic. There is no point in winning a battle only to lose the war. Exerting any form of coercive persuasion should be by the Governor, the Coordinating Council, or any other influential elements, as key legislators, state advisory councils, etc. And when evaluation *is* acceptable, it should be conducted with skill, patience and tact. Evaluation is and should be a state function, and a continuing function, and the federal government can perhaps function best by providing suggestive guidelines.

RECRUITMENT

The term "recruitment" suggests ordinarily that persons are needed to fill existing or at least, imminent vacancies. The question to be faced realistically in the field of traffic safety is not how many persons are needed to bring departments, agencies and division to optimum status, but rather what is the expectation of any considerable number of persons being employed and by whom. Approaching administrators with the question, "how many persons do you need?", will bring one answer. "How many additional people can you employ?", will bring another answer. A much more precise inventory needs to be taken of actual opportunities existing or imminent if we are to avoid a tremendous training effort (of new people) for whom there is no market.

It is quite obvious that a problem of the scope and complexity of manpower training, education, and recruitment requires continuing exploratory, developmental and clearinghouse functions in order to serve present and future manpower needs. Intermittent and disconnected efforts will not suffice.

Note: Who will do the actual job of evaluation in the several states will have to be decided. Sometimes, there may be a state division charged with responsibility for assessing the efficiency of departments. Sometimes, it may be a professional group from the state university. Sometimes, it may be an internal departmental appraisal. Rarely, it could be a private professional appraisal.

In appraising the resources in the field, the most logical group to carry on these functions is The Traffic Education and Training Committee, Traffic Conference, N. S. C. Because of the breadth of its membership, with both the private sector and governmental agencies represented, this Committee could either carry on these functions, *with a permanent staff*, working under its direction, or take initiative in forming a national coordinating agency.

One objection which may be raised is that the Committee is affiliated with one agency. It would seem, however, that this is not a too great disability because of the representative nature of the Committee's membership. If, however, it is deemed wiser to designate another national coordinating agency, a staff will still be a necessity. A great deal of work will be necessary to pull together *facts* about present manpower, extent of further employment possibilities and other items.

What is needed is the development of a set of consistent and realistic policies and procedures which will aid in performance improvement of present manpower, in securing additional manpower help, in developing training and educational facilities at all levels and for all areas, devise workable and persuasive plans for funding by both governmental and private sectors and recommend a framework of coordination of public and private facilities.

Among other advantages, a national coordinating group would eventually save money and time by eliminating the duplications, gaps, and other inadequacies of piecemeal efforts. Were it not for the time and momentum that might be lost in organizing and activating such a national group while everything else stopped, the designation of such a group should be a first priority. In any case its designation should proceed as rapidly as possible and, again, the natural instigator of such efforts is The Traffic Education and Training Committee. What is now being done by the Committee and others could be fitted in modified or discarded later, if necessary.

THE FEDERAL GOVERNMENT

It should be responsible for the preparation, printing and national distribution for training guide-lines in all areas of traffic safety. Care should be taken to assess what is now in existence, and effective, before moving in any area. And, most important, the preparation of such materials should be supervised by an *ad hoc* advisory group, *or*

the national coordinating agency to avoid the too common tendency to set down materials which someone or some group, or a research organization, thinks "they" ought to have, instead of relying on empirical experience, and finding what "they" can use to the best advantage.

Above all, there is a guideline to follow, a guideline which frightens many, who in preparing training outlines for a particular function set down a range of responsibilities which should qualify the person for membership among the apostles.

The guideline is the principle of *de minimis,* or what is the *least* that can be put down to achieve maximum effect. The opposite practice is the principle of *de maximis,* what is the most that can be set down to frighten the righteous. We are not preparing ultimate and deathless documents, but are simply trying to help some one and some agency to do better jobs.

In addition, the federal government should finance several comprehensive pilot/training projects in *willing* states, after the materials have been field tested.

There is also an area of need which states *might* find it difficult to meet, but which the federal government could meet independently or in cooperation with the states. This is training and orientation experience for personnel in all of the major agencies concerned with traffic safety in a state. The difficulty with so many people is that they do not know the "nuts and bolts" of state activities and how each agency's activities should mesh with others. If a person were placed in a succession of agencies, say two months in each, he would end up not only with better knowledge, but with ideas for improved functions and services. Coordination is "big" today. Persons to be concerned with it ought to be knowledgable about what is being coordinated.

THE PRIVATE SECTOR

The private sector should be responsible for the support of advanced study for necessary specialists and generalists; for innovative explorations in promising areas, with particular attention to studies to improve methods of cooperation and coordination among the state agencies concerned with traffic safety.

Whatever needs are not being met or cannot be met by the federal government should be of concern to the private sector.

The coordination of governmental and private resources *should* be taken for granted. What is needed is a perception of a common and

gigantic task and a willingness to cooperate in its containment. Considerable promotional activity will be needed to regenerate substantial private support, and such agencies should be willing to fit their grants to the support of established needs rather than go off on interesting but often parochial tangents.

BRIEF SUMMARY OF METHOD

Estimations of needed manpower should begin with an appraisal of how well the 'system' established to control motor vehicle movement and safety is working. Not to do this is to continue the fragmentation of control and remedial efforts which has too often characterized traffic safety measures in the past. Unless there is a systems concept understood and at work in the states the mere addition of manpower, and even the improvement of methods in an agency will not produce desired results. Too long the individual departments and agencies of state government established to deal with the accident problem have been permitted to go their own way with only token attention to what others are doing, or, until in the last decade, without any recognition of the fact that they ought to be working together.

Some of the important factors in appraising the presence or absence of a systems approach, and if there is such an approach, how does it work and is it effective are:

1.) Is there an *official* state coordinating council, established by law, with heads of all state agencies as members, with attendance and regular meetings mandated, and with prescribed duties and responsibilities?
2.) Is there actual evidence of joint programing under direction of the coordinating council, in which all or some agencies and departments cooperate in a major project which has been carefully planned and developed, operated for a set period and with an adequate attempt to evaluate results? Is this type of activity carried on regularly?
3.) Are there mechanisms established to inform thoroughly all personnel in all agencies concerned with traffic of the major components of the state's overall traffic safety program and how their individual work and the work of their departments and agencies fit into the picture?
Are they regularly informed of progress?
Are their ideas and suggestions invited?
4.) Is there a systematic, well-planned program of public edu-

cation with a two-fold purpose of teaching better driving to the citizens by education rather than slogans, and informing them what the state is actually doing to promote greater safety?

5.) Has a statewide Citizens Advisory Council been formed to assist in the state program?

6.) Are regular legislative relationships maintained for the purpose of informing legislators and developing support? This is a sensitive area. *Any* relationships informational or otherwise, with legislatures must be governed by state policy. A number of states discourage or directly prohibit such approaches to legislatures. In such cases, sagacious administrators can arrange to be invited to furnish information or to invite support.

The foregoing are some of the factors which should be carefully studied, with the best tools available, *before* considering the problem of manpower increases in the individual agencies. The reason for this order of precedence is that the task is not only to improve the functioning of the individual agencies, but to assure that the external function of the agency, namely its effective participation in *total* programs to control traffic movement and safety is being adequately carried out.

MANPOWER INCREASES WITHIN AGENCIES

It is a fact of experience that state agencies in the past have tended often to go before appropriations committees of legislatures with requests for more money, more personnel and with very poor preparation and justification. This is no longer so true. Money is tighter and appropriations committees are tighter. They want to be shown.

A brief example of both the correct and incorrect approaches will show the advantage of thorough preparation of the case.

In one of the early Traffic Program Management courses, the head of a state patrol stated that in three successive legislative sessions he had applied for fifty extra men and failed. Questioning elicited the fact that the case had been prepared very superficially. Without going into detail, he was advised of a careful plan which had been developed for the course program to prepare a very careful analysis of what was being done and what wasn't being done on the basis of present patrol strength. Too many persons tend to think of total patrol strength being available, whereas length of tours, court appearances, sickness, days

off and vacations, result in only part of a patrol being on the road at any one time, excepting times of emergency when all available strength is mustered.

What wasn't being done, because of insufficient strength was similarly detailed. What roads weren't being patrolled, what special procedures could not be instituted, what needs could not be met, etc., were all outlined. At the next session of the legislature, patrol strength was increased by seventy which number took partial account of increase of work since the first applications were made. This and numerous similar examples suggested to the director of the Traffic Program Management courses both a plan for increasing personnel strength in all agencies, plus a normal increase or escalation factor.

The steps are simple, but each must be carried out carefully.

1.) Make a careful analysis in each agency of work to be done and the number of persons to do it and including such normal items as administrative procedures, job methods, supervisory skills and the use of sophisticated equipment, etc., thus arriving at an evaluation of agency efficiency.
2.) Determine a realistic and not a forbidding number of people necessary to do the work, following good practices in every division. This number should be based on present needs. It will be difficult, but a strong, well-planned comprehensive effort should be made to secure the desired number of personnel, utilizing every possible resource.
3.) At that time, legislation should be sought which would mandate annual or biennial personnel increases based on increase of work factors which must be established for each agency separately.

This is admittedly a difficult job, but not an insuperable one. Done in a statewide basis, this plan would keep agency strengths on a parity and do away with the periodic hat in hand approach to legislatures when more people are needed.

LIST OF APPENDICES

A. Organizations Visited During the Course of the Study.

B. Manpower Development in Highway Safety Symposium Program.

C. Participants in Manpower Development in Highway Safety Symposium, Atlanta, Ga., April 27–28, 1971.

D. Composite List of Questions and Issues Concerning Highway Safety Manpower.

E. Letter from Douglas W. Toms, administrator of the National Highway Traffic Safety Administration to non-governmental agencies concerning support for education and training in highway safety organizations.

F. An Outline of Key Questions and Topics Related to Manpower Development in Highway Safety.

Appendix A

Interviews were conducted with appropriate representatives of the following organizations concerned with manpower development in highway safety:

1. American Automobile Association, 1712 C Street, N.W., Washington, D.C.
2. American Association of Motor Vehicle Administrators, 1828 L Street, Washington, D.C.
3. American Association of Junior Colleges, 1 Dupont Circle, Washington, D.C.
4. Highway Research Board, 2101 Constitution Ave., Washington, D.C.
5. Highway Users Federation for Safety and Mobility, 1776 Massachusetts Ave., N.W., Washington, D.C.
6. Institute of Traffic Engineers, 2029 K Street, N.W., Washington, D.C.
7. International Association of Chiefs of Police, 1319 18th Street, N.W., Washington, D.C.
8. National Highway Traffic Safety Administration, Washington, D.C.
9. National Safety Council, 425 N. Michigan Ave., Chicago, Ill.

Appendix B

SYMPOSIUM

Manpower Development In Highway Safety

Holiday Inn, N.W. and Royal Coach Inn

Atlanta, Ga. April 27-28, 1971

PROGRAM

Tuesday, April 27

1:15 p.m.-3:15 p.m. — General Session

Problems and Issues In Highway Safety Manpower Development– Gordon H. Sheehe, Director, Highway Traffic Safety Center, Michigan State University.

The National Highway Traffic Safety Administration Plans For Manpower Development–Dr. Charles H. Hartman, Deputy Administrator, NHTSA.

3:45 p.m.-4:45 p.m. — Small Group Sessions

Group A–
Group B–
Group C–
Group D–

6:00 p.m.-7:00 p.m. — Hospitality Hour

Wednesday, April 28

8:45 a.m.-10:00 a.m. — General Session

Identifying Training Needs Through An Analysis of the Tasks And Performance Criteria–Harris H. Shettel, Jr., Director of the Institute for the Development of Human Resources, American Institutes for Research, Pittsburg, Pa.

APPENDIX B

Guidelines for Coordinating Education and Training Programs Within A State—Dr. Myron R. Blee, Executive Director, Associated Consultant in Education, Inc., Tallahassee, Florida.

10:30 a.m.-12:15 p.m. — Small Groups Reconvene

Group A—
Group B—
Group C—
Group D—

12:15 p.m.-1:45 p.m. — Luncheon Meeting

2:30 p.m.-3:30 p.m. — General Session

Reports from Small Groups
Summation of the Symposium

Appendix C

SYMPOSIUM

Manpower Development in Highway Safety

Holiday Inn—Northwest and Royal Coach

Atlanta, Georgia April 27-28, 1971

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APPENDIX C

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Appendix D

SYMPOSIUM

Manpower Development In Highway Safety

Atlanta, Ga. April 27–28, 1971

Issues and Questions

1. What are the primary needs in highway safety manpower development by (a) program standards, (b) level of performance (professional, technician, etc.), and (c) geographical area?
2. How can education and training be equated to actual employment? Is the job market expanding or stabilizing in highway safety? Can education and training of present work force improve performance sufficiently to off-set a stabilized job market?
3. How do you persuade those involved in highway safety activity directly and indirectly, but who are not within governmental agencies, of the need for improving their efficiency. Persons in this category include judges, prosecutors, safety organizations managers, emergency medical care services operators, and others.
4. Once the priority needs are established and located, what agencies or institutions are or can be prepared to assume this responsibility for manpower development?
5. After identifying the institutions or agencies, has sufficient task and instructional analysis been performed to enable these programs to train the people in the knowledge and skill they should possess to perform the job successfully? In short, how do you assure that education and training provided is appropriate, fills the need, is effective? Are the instructors qualified?
6. How can we distill from the mass of existing printed materials and research data that which would be most useful for education and training programs?
7. How do you develop a system for planning, organizing and coordinating education and training in each state, and in some in-

stances regionally, to provide the education and training needed? Who should take the initiative in the development of this system?

8. How do you motivate educational institutions, including junior colleges and private institutions and institutes, to establish highway safety education programs—both credit and non-credit?
9. How should the costs of highway safety education and training be met? Where should the money come from?
10. What assistance can we anticipate from the National Highway Traffic Safety Administration with respect to manpower development? Do any other federal agencies provide assistance to manpower development in highway safety?
11. To what extent can we anticipate assistance from the private sector regarding resources for education and training programs?
12. How do you convince those controlling funds, both governmental and private, that more funds need to be provided for more and better education and training—for facilities, instructional staffs, materials, subsistence of students, etc.?
13. How can the resources and efforts of the private sector, government, and the voluntary safety movement be coordinated into an effective manpower development system?

Appendix E

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

WASHINGTON, D.C. 20591

IN REPLY REFER TO:

Mr. Thomas C. Mann
President, Automobile Manufacturers
Association, Inc.
1619 Massachusetts Avenue, N.W.
Washington, D.C. 20036

Dear Tom:

In the National Highway Traffic Safety Administration we have identified three priority programs—alcohol countermeasures, crash survivability and the experimental safety vehicle. We are concentrating our resources in these priority areas because they hold much potential for greatly reducing highway deaths and injuries within a relatively short period of time.

While these three priority programs go forward, NHTSA is also pursuing a number of additional efforts in the state and community area, in motor vehicle safety and in research. Effective efforts in all these areas depend on a continuing supply of well qualified, technically proficient personnel. This is true not only for NHTSA, but for the States, local communities, and the private sector.

APPENDIX E

Prior to the Highway Safety Act of 1966, many private organizations—companies, foundations and others—played an important role in highway safety manpower development and training. Support typically was in the form of: (1) scholarships, fellowships or internships for graduate studies, (2) grants to academic institutions in support of their instructional programs, and (3) funds and staff assistance to prepare technical publications useful for education and training.

Unfortunately, in the four and one-half years since the Highway Safety Act became law, there has been an almost total withdrawal of private funding for highway safety manpower development at the national level. A principal reason given for this withdrawal has been the assumption that Federal resources would be provided to supplant and expand fellowships and similar programs previously supported with private funds.

Unfortunately, the level of funding made available to NHTSA has precluded more than a token effort on our part to provide fellowship and manpower development opportunities on a national basis. Over the past years NHTSA has funded literally "a drop in the bucket." Not only have the NHTSA sponsored fellowships been miniscule when compared to national needs, but they have been few when compared with what was provided by private sources prior to 1966. In short, the problem has worsened considerably in the last four and one-half years. My purpose in writing to you at this time is to focus attention on this critical problem. Unless ways are found to increase education and training opportunities (including financial support) in the field of highway traffic safety we all will face a deteriorating supply of technical, professional and research personnel in the very near future.

Secondly, I write to ask your serious and thoughtful consideration of how your organization might become directly and forcefully involved in a renewal of private support for these programs. The NHTSA is ending its "drop in the bucket" support of scholarships, fellowships and similar long-term career assistance programs. In the absence of a clear mandate and specific funds to support manpower development of this type, we feel it is detrimental to continue with the illusion that the Federal government is meeting this need.

Here then is an excellent opportunity for private groups to re-enter and resume a leadership role in traffic safety manpower development.

The need is great. It is our hope that you will budget and plan for an increasing role in traffic safety manpower development. Both Charley Hartman and I stand ready to discuss this concern with you. We hope that you will help.

Sincerely,

Doug

Douglas W. Toms
Acting Administrator

Appendix F

An Outline of Key Questions and Topics Related to Manpower Development in Highway Safety

I. *What is the nature and scope of manpower development in highway safety?*

A. Manpower development—a *means* to implementing the Highway Safety Act of 1966. (The Standards)

B. *Categories* of highway safety manpower both government and private sector occupations.

C. *Levels* of education and training needed.

D. Manpower studies: B.A. & H.; NACO; and S.R.I.

E. Dearth of precise data on need for education and training.

II. *What factors should be considered when assessing education and training needs within a state or community?*

A. Evaluation of present manpower utilization.

B. Present status of education and training and reasons for inadequacies.

C. Realistic information on the job market and employment opportunities—new positions and replacements.

D. A systematic assessment of job requirements (task analysis) as a basis for determining education and training priorities.

E. Entry level and re-fresher training.

F. Long range vs. short range needs.

G. Possible impact on training needs of changes in transportation modes and highway and vehicle design.

H. Alternatives to training—selection and training on the job.

III. *When the priority needs are established, what agencies or institutions have financial and other resources to help meet the needs?*

A. National Highway Traffic Safety Administration.

B. Other federal agencies, such as, the Department of Labor, HEW, Department of Justice and others.

C. State and local governmental agencies. ("In-house" programs)

D. Private foundations, institutes, and consulting firms.

E. Business and industry.

F. Educational institutions: colleges and universities; community colleges; vocational-technical schools.

G. Armed Forces

H. Combinations of the preceding resources

IV. *Given the resources, how do you build quality education and training programs?*

A. Define the target audience–age, prior capabilities, etc.–and start where they are.

B. Define the job, the knowledges and skills needed. (Job analysis or job design)

C. Derive training objectives from the job analysis and state them in operational and measurable terms. (Also stipulate acceptable job performance limits or tolerances.)

D. Develop an instructional package (curriculum) based on sound instruction and learning principles.

E. Field test and revise the instructional package.

F. Prepare qualified instructors.

V. *What are the logistics of getting the instructional package to the student?*

A. Prepare a rationale to convince administrators that the training is a key to better performance and lower cost of operation. (Use evidence from evaluation studies.)

B. Minimize time away from job by locating refresher training reasonably close to the trainee.

C. Give special emphasis to developing a "pool" of qualified instructors, especially when they are also operational personnel.

D. Establish incentives that will encourage workers to take advantage of training programs (released time, salary increases, promotions, scholarships, certification, etc.).

E. Use sound advertising techniques to inform and attract people to take advantage of the opportunity.

VI. *How do you evaluate the effectiveness of education and training programs?*

A. Student achievement as measured against end of course proficiency criteria.

B. Viewpoints of students at end of course on course content and instructional methods.

C. Job performance following the training period as evaluated by supervisors. (Cooperative on-the-job work experience provides immediate feedback.)

D. Where feasible to show a direct relationship, use accident and injury data as criteria for judging training effectiveness. (Training program for commercial drivers.)

VII. *How do we interest people, especially youth, in preparing for a career in highway safety.*

A. Provide school guidance counselors with information about *careers in highway safety.* (HUFSAM Filmstrip)

B. Through high school driver education courses and college-university courses related to the highway transportation system.

C. Expand and upgrade college and university programs designed to prepare or improve highway safety professionals and technicians.

D. Offer scholarships, fellowships and other forms of financial assistance.

E. Provide competitive salaries.

F. Highway safety personnel seizing opportunities to recruit young people.

VIII. How can the resources and efforts of the private sector, government and the voluntary safety movement be coordinated into an effective manpower system?

A. A national level coordinating agency which includes representation from (1) government agencies with interest in highway safety manpower, (2) private organizations with similar interest, and (3) educational institutions. This coordinating agency would be concerned with the development of national manpower policies, priorities and guidelines for state coordinating committees. They would also communicate the needs in highway safety manpower development to the U.S. Congress and to business and industrial leaders.

B. A state level highway safety advisory committee on education and training as suggested in the Blue Book (p. 24). A specialist in manpower development from the Governor's Highway Safety Commission (the name varies from state to state) would play a leadership role with respect to the formation and functioning of this committee.

C. A coordinating mechanism in each local jurisdiction. The guidebooks produced by NACORF, *Community Action Program for Traffic Safety*, are designed to help communities coordinate local services and programs.